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ABSTRACT

The Post-Education Employment Tracking System (PEETS) is an automated system for tracking employment rates and earnings of community college program completers and leavers, linking state Employment Development Department (EDD) unemployment insurance (UI) records with student data from the Chancellor's Office of the California Community Colleges. A pilot study in 1992-93 examined outcomes for Santa Barbara City College and Grossmont College and concluded that PEETS is a cost-effective method for tracking former student success. A follow-up study was conducted to refine the use of PEETS by expanding the original study sample, investigating 4-year outcomes for 173,535 students at 18 California community colleges who either completed in 1992 or 1993 or stopped attending in 1991 or 1992. The follow-up study found that UI records were available for the majority of the sample; that wages of students who received a certificate or degree from an occupational program were higher than both those who left occupational programs without a degree or certificate and those who completed non-occupational programs; and that occupational students with a degree or certificate made a 47% gain in wages between their last year of college and the third year after college. Recommendations for improving the usefulness of PEETS data include using student files from California public and private universities and expanding the system to secondary schools, job training programs, and correctional institutes. Appendixes provide a sample outcomes data table and a description of a Florida follow-up system. (TGI)

Using Wage Record Data to Track the Post-College Employment Rates and Wages of California Community College Students

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Thanks to the efforts of many people, the idea of using UI wage record data in follow-up studies has become a reality. Dr. Ernie Leach and Dr. Susan Sargent were instrumental in promoting the idea to the Employment Development Department. Dave Jones, of EDD, devoted a great deal of time in preparing the data files used in the pilot projects and in assessing the feasibility of using UI wage record data in this type of study. He provided the expertise needed to make this study possible. Dr. Phoebe Helm has played a critical role in providing the support for this project. Dr. Helm, Chris Willis and Marilyn Jorgensen have provided the leadership and support needed to take the idea of a longitudinal tracking study matching UI wage records with the Chancellor's Office MIS data from its conceptual stage to a system that will be fully implemented.

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USING WAGE RECORD DATA TO TRACK THE POST-COLLEGE EMPLOYMENT RATES AND WAGES OF CALIFORNIA COMMUNITY COLLEGE STUDENTS

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SUMMARY OF MAJOR PROJECT FINDINGS AND RECOMMENDATIONS

What are the post-college employment rates and wages by major field for California community college students who earn an associate degree or certificate in an occupational education program? Do the post-college earnings of students with associate degrees increase over time at a faster rate than those of students who left college before receiving a degree? Are there systematic differences in the post-college employment rates and earnings among occupational education students in different population groups?

Accurate and timely answers to these questions can now be provided in an efficient and cost-effective manner through the Post-Education Employment Tracking System (PEETS) that is operated by the Chancellor's Office of the California Community Colleges, in cooperation with the State of California's Employment Development Department (EDD). This automated system for tracking the post-college employment rates and earnings of community college program completers and leavers over an extended period of time involves electronically matching, by social security number, quarterly wage record data routinely collected by EDD from employers with student demographic and educational data available in the Chancellor's Office Management Information System (MIS).

The primary objective of this study was to refine the procedures for collecting, analyzing and reporting the data to be used by the Chancellor's Office to track the post-college employment rates and wages of students over a four-year period (last year in college to the third-year out of college). This pilot project involved tracking over a four-year period the post-college job placement rates and wages of 173,535 program completers and leavers who were enrolled in a sample of 18 California community colleges.

The results of this study revealed that:

1. UI wage record data were available for the vast majority of students one-to-three years after they last attended their community college. Of the 173,535 students in this study, UI wage record data were available for 78% of the students in the year they last attended college, 75% of the students in their first year after leaving college, and 69% of the former students in their third-year out of college.

2. In the third-year after leaving the community college, the wages of students in occupational education programs who earned a certificate or an associate degree were substantially higher than those of occupational education students in each of the other educational attainment categories (zero units completed; 1-11.9; 12-232.9; and 24 or more, but no degree or certificate). The difference in third-year out of college wages was most pronounced between students who earned a degree/certificate and those who withdrew from college without completing any units with a grade of "C" or higher.

   To illustrate, the average third-year out-of-college wages of occupational education students 24 years of age or younger who earned an associate degree or certificate were 41% greater than the wages of those who withdrew from college before completing any units ($25,866 vs. $18,326). Similarly, among all occupational education students, those who achieved an associate degree or certificate had an average third-year out-of-college annual wage of $30,158 compared to $24,176 for those who completed 24 or more units but no degree, and $23,442 for students who withdrew from college without completing any units of coursework.

3. Students 24 years of age or younger who earned an associate degree/certificate experienced a 89% gain in wages from their last year in college to the third-year out-of-college. This four-year increase in the average wages of those who achieved an associate degree or certificate was nearly twice as high as that experienced by non-degree/certificate completers who earned 24 or more units of college course work (89% vs. 47%), and almost three times as great as the increase in wages acquired by those who withdrew from college without completing any courses (89% vs. 30%).

4. Among all occupational education students (not controlling for age), those who obtained an associate degree or certificate registered a 47% gain in wages from their last year in college to their third-year out of college. This four-year increase in the average annual wages of those who achieved an associate degree or certificate was nearly three times as high as that realized by students who completed 24 or more units but no degree (47% vs. 17% increase in annual wages), and over four times greater than those who withdrew from college without completing any units with a passing grade (47% vs. 11% increase in annual wages).

5. The greater the number of units completed, the greater the increase in wages received over the four-year time period examined (last year in college to three years after college).

6. Students who earned an associate degree/certificate were more likely to have worked all four quarters in their third-year out of college than those in the other educational attainment categories. For example, 80% of those with associate

degrees/certificates were employed all four quarters three years after they last attended college compared to 71% of those who left their community college after they completed 24 or more units, and 66% for students who withdrew from college without completing any courses.

7. In each of the years examined (last year in college and first and third-year after college), students who received a degree/certificate in an occupational major had higher wages than those who earned a degree/certificate in a non-occupational program area. The percentage gain in wages from the last year in college to the third-year after leaving the community college were comparable (within five percent) for graduates of occupational and non-occupational programs.

8. The third-year out-of-college wages for degree/certificate recipients under 25 years of age ranged from a high of $38,629 for graduates of nursing-related majors, to $22,240 for those in electronics-related fields, to $17,002 for individuals in human service-related fields (e.g., early childhood education, cosmetology, teacher aides).

9. With one exception, there was over a 40% gain in wages from the last year in college to the third-year after college for degree/certificate holders in each of the occupational education programs examined. In fact, program completers in six of the nine majors covered in this study experienced an average increase in wages of 50% or more in the four-year period examined.

10. Almost three-fourths (72%) of the students 25 years of age or younger who earned an associate degree/certificate in a occupational education area had wages of $12,875 or more three years after they left their community colleges. The percentage of program completers who three years after leaving college had wages of $12,875 or more ranged from a high of 95% for those in nursing-related fields, to 87% for those who majored in electronics or secretarial studies, to 83% for administration of justice majors, to 47% for former students who majored in a human services field.

11. The average wage of students who completed an associate degree or certificate in a occupational major and who earned $12,875 or more in their first year out of college was $22,817. The average wage of these former students three years after leaving their community college was $24,952. This translates into a four-year increase in wages of 17% after controlling for inflation.

12. Economically disadvantaged students (students who received or were eligible for financial aid) who earned an associate degree or certificate achieved a 107% increase in their annual wages from their last year in college to their third-year out of college. This four-year gain in wages of 107% is substantially greater than the gains achieved by non-economically disadvantaged students who earned an

associate degree or certificate (36%) or who left college without an associate degree or certificate (14%).

13. Economically disadvantaged students under 25 years of age who earned an associate degree or certificate experienced a 100% increase in wages from their last year in college to their third-year out of college. This increase in wages enabled the economically disadvantaged who earned an associate degree or certificate to surpass the third-year out-of-college wages of non-economically disadvantaged students who did not earn an associate degree or certificate ($23,745 vs. $20,622).

14. Individuals who entered college with limited English proficiency (LEP)skills and who earned an associate degree or certificate experienced a 71% increase in wages from their last year in college to their third-year out of college. This 71% increase in earnings among LEP students who earned an associate degree or certificate was nearly twice as high as the gains registered by non-LEP students with a degree or certificate (71% vs. 37%), and more than five times higher than the wages for non-LEP students who did not achieve an associate degree or certificate (71% vs. 14%).

15. The third-year out-of-college wages of LEP students who earned an associate degree or certificate were higher than those of LEP and non-LEP students who left their community colleges without completing an associate degree or certificate.

16. For students under 25 years of age, the gains in wages from the last year in college to the third-year out of college were highest among non-LEP students who earned an associate degree or certificate (110%), LEP students who left college without achieving a degree or certificate had the smallest increase in wages from their last year in college to the third-year out of college (40%).

17. Students under 25 years of age who entered college in need of academic remediation (academically disadvantaged) and who earned an associate degree or certificate increased their wages during the four-year time period studied by 141%. These students had higher third-year out-of-college wages than non-academically disadvantaged students with an associate degree or certificate ($31,303 vs. $25,406) and non-academically disadvantaged students without an associate degree or certificate ($31,303 vs. $20,202). The lowest third-year out-of-college wages for students under 25 years of age was received by academically disadvantaged students who did not earn an associate degree or certificate ($18,994).

18. The wages of non-academically disadvantaged students were much higher than those of academically disadvantaged students in each of the three time periods examined. However, the last year in college to third-year out-of-college gains in wages for academically disadvantaged students who earned a degree or

certificate were substantially greater than that achieved by non-academically disadvantaged students who did not receive a degree or certificate (45% vs. 16%) and by academically disadvantaged students who left college without earning an associate degree or certificate (45% vs. 16%).

19. Non-underrepresented students (white non-Hispanic and Asian) had higher wages than underrepresented students in each of the three years considered in this study. The differences in first- and third-year out-of-college annual wages were most pronounced between non-underrepresented students who achieved an associate degree or certificate and underrepresented students who did not earn a degree or certificate.

20. Last year in college to third-year out-of-college gains in wages were highest among underrepresented (36%) and non-underrepresented students (43%) who earned an associate degree or certificate and lowest among underrepresented (16%) and non-underrepresented students (14%) who left their community college without a degree or certificate.

21. For those under 25 years of age, the gains in wages from the last year in college to the third-year out of college were nearly twice as high for underrepresented and non-underrepresented students who earned an associate degree or certificate than for students without a degree or certificate.

22. Underrepresented students who completed an associate degree or certificate had higher wages in their first and third-year out of college than non-underrepresented students who left college before receiving a degree or certificate.

23. With one exception, students without a disability had higher wages than those with a disability in each of the three years examined. Similarly, the percentage of individuals who worked four consecutive quarters in each of the three years examined was greater for those without a disability than for those with a disability.

24. The greatest gain in wages from last year in college to third-year out of college was among students with a disability who earned an associate degree or certificate (64%). Students with a disability who left college without an associate degree or certificate experienced a gain of 18% in their wages during the four-year time period examined (last year in college to third-year out of college).

25. There were substantial gains from the last year in college to the third-year out of college in the percentage of students with a disability who worked year-round and who earned $12,875 or more. To illustrate, the last year in college to third-year out of college gains in the percentage of the former students who worked year-round and earned $12,875 or more was 78% for those with a disability who completed an associate degree or certificate.

26. The average annual wages of men were higher than those received by women in each of the three years examined. However, the first- and third-year out-of-college wages of students under 25 years of age were higher for women with an associate degree or certificate than for men with an associate degree or certificate. This finding can be attributed to the high salaries earned by graduates (predominately women) of nursing-related programs.

27. The most dramatic gains in wages from the last year in college to the third-year out of college occurred among women (98%) and men (75%) under 25 years of age who completed an associate degree or certificate.

28. The gap in third-year out-of-college annual wages between males and females was greatest when not controlling for age or educational attainment ($34,294 vs. $26,957). Although the first- and third-year-out-of-college annual wages for males with an associate degree or certificate were higher than those of females with degrees and certificates, the differences were not as pronounced.

ADDITIONAL STEPS TAKEN TO ENHANCE THE EFFECTIVENESS OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

1. Since the completion of this pilot study, EDD has entered into an agreement with the federal government's Office of Personnel Management and the Department of Defense to add the wage record data to PEETS for California residents who are federal civilian employees or who are enlisted in the U.S. military. (EDD does not collect UI wage record data from individuals employed in these federal agencies.) Including federal civilian and military employees in the UI wage record database will expand the number of former community college students included in the Post-Secondary Employment Tracking System.

2. EDD, the Chancellor's Office and Santa Barbara City College are conducting a pilot project to collect the following information from employers of former community college graduates:

    1. the employee's most recent job title;
    2. the number of scheduled hours the employee worked in a typical week; and
    3. the county of the employee's job site.

If the Employer Survey Pilot Project demonstrates that it is cost-effective to collect supplemental information from employers on former students' job titles, number of hours worked per week and county of employment, then PEETS will allow for determinations on whether students' post-college jobs are in fields related to their occupational education training, their hourly wages, whether or not they are employed full-time, and the county in which they are employed.

RECOMMENDATIONS

Recommendation 1. The UI wage record data and the Chancellor's Office Student MIS files should be matched with student files from California's public and private four-year colleges and universities. This will enable PEETS users to (1) separate the employment data for former students who continue their education after leaving their community college from that of former students who are no longer attending college in California; and (2) assess the economic value of completing upper division coursework and degrees in particular fields of study.

Linking UI wage record data with the MIS data of all accredited California public and private postsecondary education institutions would also provide the state with a cost effective method for tracking the transfer, graduation, employment and wage rates of students. At present, the state of California doesn't have an effective system in place for tracking the transfer rates of students from community colleges to CSU, UC or private colleges and universities.

Recommendation 2. Consideration should be given to expanding PEETS to include students enrolled in California secondary education schools, Regional Occupation Programs (ROPs), publicly funded job training programs; and, given the size and projected growth of its population, inmates in corrections institutions. This information would provide comprehensive data on the extent to which participation in different types and levels (secondary through graduate school) of instructional programs is associated with gains in employment, wages and/or continued education rates for participants in different population groups.

The data would be of great value in influencing public policy decisions, in assisting training entities in assessing and strengthening their programs and in providing consumers with much-needed information on the economic return on their investment in selecting different types and levels of educational programs and providers.

Recommendation 3. By the start of each term, community colleges should require all students to identify the primary objective they have for attending college. Knowing the primary reasons students have for attending college will allow for much more meaningful analyses and interpretations of the data.

Recommendation 4. The California State Legislature should create a state-wide agency to collect follow-up data on the employment, earnings and continuing postsecondary education rates of all participants in the state's education, employment and job training programs. Follow-up data should be collected from participants in the programs ranging from secondary schools to Ph.D. programs, and from federal and state funded job training programs to the state's burgeoning corrections/prison programs.

CONCLUSION

The findings and recommendations of this pilot project show the potential value of the Post-Education Employment Tracking System in providing data that could be used in meeting federal and state accountability requirements for occupational education and job training programs, in assisting educators in assessing and strengthening their programs, and in providing consumers with much-needed information on the economic return on their investment in selecting different types and levels of education programs and providers. Serious consideration should be given to implementing the recommendations advanced in this paper for enhancing the effectiveness of the Post-Education Employment Tracking System.

USING WAGE RECORD DATA TO TRACK THE POST-COLLEGE EMPLOYMENT RATES AND WAGES OF CALIFORNIA COMMUNITY COLLEGE STUDENTS

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In 1992-93 a pilot project was completed to determine the feasibility of linking unemployment insurance (UI) record data collected by the California Employment Development Department (EDD) with student data available in the Chancellor's Office of the California Community Colleges' (COCCC) Management Information System (*Friedlander, 1993*). The results of this pilot project, based on data from two California community colleges (Grossmont College and Santa Barbara City College), demonstrated that linking UI wage record data collected quarterly by the California Employment Development Department with the student data available in the Chancellor's Office MIS is technically feasible, cost-effective and educationally valuable.

As a result of the feasibility study, the decision was made to use the unemployment insurance wage record data collected by EDD to track the post-community college employment rates and wages of all California community college program completers and leavers. The method developed in this project for linking wage record data collected by EDD with student data residing in the Chancellor's Office Management Information System has been named the Post-Education Employment Tracking System (PEETS).

Objectives of Study

The primary objective of this study was to refine the procedures for collecting, analyzing and reporting the data to be used by the Chancellor's Office to track the post-college employment rates and wages of students over a four-year period (last year in college to the third year out of college). This pilot project involved tracking over a four-year period the post-college job placement rates and earnings of program leavers who were enrolled in one of the following 18 California community colleges:

Cabrillo College
Cuyamaca College
Grossmont College
Los Angeles Trade-Tech College
West Los Angeles College
Mission College
College of Alameda

Laney College
Merritt College
Vista College
San Diego City College
San Diego Mesa College
San Diego Miramar College
San Diego Community College Adult Program
Santa Barbara City College
Moorpark College
Oxnard College
Ventura College

This pilot study was designed to achieve the following objectives:

1. The results of the initial pilot project that involved two suburban colleges will be cross-validated with a larger and more diverse cross-section of community colleges.

2. The templates developed in the pilot project for reporting data to individual campuses as well as to the Chancellor's Office will be field-tested and refined.

3. A method for defining majors in occupational and non-occupational education programs will be field-tested and refined.

4. The MIS-derived definitions of special populations will be examined to determine if they are viable for use by individual community colleges.

5. The procedures used to track the post-college employment rates and wages for occupational education students will be applied to students in non-occupational education programs. Problems in applying the tracking system to non-occupational education students will be identified and methods for addressing the problems will be proposed.

6. Approaches will be identified for measuring the economic benefit (increased wages) of completing community college courses, certificates and degree programs.

7. Recommendations will be provided for collecting information about former community college students on questions that cannot be answered from the UI wage records, such as the number of hours worked per week and the relationship between the students' majors in college and their current jobs.

METHOD

The three criteria used in selecting the colleges to participate in this project were:

(1) ability to provide in a timely manner the student data needed; (2) location of the

college (urban, suburban, semi-rural); and (3) willingness to participate in the study. The colleges included in this study are quite diverse with respect to size, location and student demographics.

The data analyses conducted for this study are based on information from 173,535 students enrolled in the 18 pilot project colleges who earned an associate degree or state-approved college certificate in 1991-92 or 1992-93, or who stopped attending classes at their former community colleges for at least one year in 1990-91 or 1991-92. Since the employment rates and wages (controlled for inflation) didn't fluctuate much from 1990-91 to 1991-92, the decision was made to track as one group the students who did not re-enroll in the community colleges they were attending in either 1990-91 or 1991-92. Combining two years of data helped alleviate problems associated with analyzing data for small groups of students in particular categories (e.g., economically disadvantaged students who went on to complete an Associate Degree in Electronics).

DESCRIPTION OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM (PEETS)

The Post-Education Employment Tracking System consists of two sources of data: (1) Unemployment Insurance (UI) wage data records collected quarterly from employers by the California Employment Development Department; and (2) demographic and educational data for all California community college students available in the Chancellor's Office Management Information System. The following is a brief description of these data sources.

Unemployment Insurance Wage Record Data

Unemployment Insurance wage records collected and maintained by California's Employment Development Department are used to determine employment rates and earnings. UI wage records contain quarterly reports of earnings submitted by each employer who is required to comply with the state's Unemployment Insurance Compensation Law.

For each employee covered, an employer is required to report an employee's social security number and the total amount of earnings received during the quarter. The employer also reports his/her own unique employer identification number, the county in which the business is located, and the industry affiliation of the business (*Standard Industrial Classification Code*). Information on the actual number of hours worked in the quarter and the title of the position held by the employee is not currently collected from employers. All states are required by federal law to collect this information to administer their Unemployment Insurance Compensation laws.

Approximately 95% of all persons employed in California are included in the state's UI

wage record database maintained by EDD. Those not included in the state's UI wage record database are self-employed people, employees who are paid entirely on a commission basis, and federal government employees, including those in the military. These three groups, combined, comprise no more than three percent of the labor force nationwide (*Stevens, et al, 1992*). In addition, people who work outside of California are not included in the state's UI wage record database. As noted later in this report, California's Employment Development Department has recently completed agreements with the U.S. Office of Management Personnel and the Department of Defense to include in the agencies' databases employment and wage record data for California residents who are federal civilian employees or who are enlisted in the military.

California Community Colleges Management Information System (MIS)

The Chancellor's Office MIS contains demographic and educational data for all students who attended a California community college. The MIS is the state's official repository of community college student data from Fall 1990 forward. Demographic and educational background data available in the MIS include age, gender, ethnicity, financial aid status, English language proficiency and disability status. Educational data stored in the MIS include enrollment in pre-collegiate basic skills courses, occupational and non-occupational courses completed, grades, and degrees and certificates awarded.

Linking UI Wage Record Data with Student Data in the Chancellor's Office MIS

The Post-Education Employment Tracking System involves electronically matching the social security number in the UI wage record data files maintained by EDD with the student record files stored in the Chancellor's Office MIS. The following procedures are used in adding the UI wage record data to the student record files in the Chancellor's Office MIS:

1. The student record files for California community college program completers and leavers are electronically submitted to EDD by the Chancellor's Office MIS unit.

2. EDD uses social security numbers to electronically match the wage record data files with the student data files.

3. EDD adds the wage record data to each student record file for each of the quarters requested.

4. To protect confidentiality of the data, SSNs are replaced by student identification numbers. The Social Security Administration Act allows for the use of social security numbers for identifying participants in publicly-funded programs. The

Freedom of Information Act and the Buckley Amendments state that when data are aggregated to a level where no individuals or specific firms can be identified, a report will be in compliance. The procedures used in reporting the wage data to colleges will be consistent with the *California Unemployment Insurance Code* (Sections 1094 and 1095).

5. The student records, now containing the wage record date, are returned to the Chancellor's Office for analysis.

6. Longitudinal data on the employment and wages of former students are acquired by having the Chancellor's Office MIS unit resubmit the student record files to EDD once a year to update the wage record information.

Current plans call for EDD to update the wage record data for each program completer and leaver for a four-year period, from the individual's last year of attending a California community college to three years after leaving the college. Adding UI wage record data to the comprehensive files in the Chancellor's Office MIS will allow community college educators to ask a wide range of questions on the relationship between student participation in occupational education programs and post-college employment outcomes. Examples of the kinds of questions that can be addressed from data made available from the Post-Education Employment Tracking System are listed in **Table 1.**

TABLE 1

QUESTIONS THAT CAN BE ANSWERED BY LINKING WAGE RECORD DATA WITH STUDENT RECORDS IN THE CHANCELLOR'S OFFICE MANAGEMENT INFORMATION SYSTEM*

Question	Comments
How many students are working in California one to three-years after they leave college?	Yes
How many students find year-round employment in California after completing a degree or certificate in their program of study?	Yes
*How many students are working full-time and how many are employed part-time one to three years after they last attended college?	Yes, if supplemental data are collected from employers.
What are the employment rates and earnings one to three years after leaving college, by major field, for students who completed an associate degree or who completed a specified number of units in their major with no degree or certificate?	Yes
Do the earnings of students with associate degrees increase over time at a greater rate than those of students who did not complete an associate degree?	Yes
How many degree completers in each occupational major are employed in jobs related to their training?	Yes, if supplemental data are collected from employers.
What are the earnings and employment rates of former students in different population groups?	Yes
*How many of the former students in each program area find employment in the county in which the college is located? In which counties of the state do former students in a particular program area work?	Yes, if supplemental data are collected from employers.
Do students who participate in particular college programs, such as Cooperative Work Experience, have higher employment rates and earnings than comparable groups of students who did not participate in these programs?	Yes

*Note: Data are available on the industry in which an individual is employed, but not the specific position the person holds within the industry. A study is being conducted to determine the feasibility of asking employers to provide the following information: (1) the job title of the former student; (2) the number of hours a week the former student worked; and (3) the county in which the individual is employed.

MAJOR FINDINGS OF THE STUDY

Percentage of Former Students for Whom UI Wage Record Data Were Available (Match Rate)

The percentage of former students for whom UI wage record data were available in the students' last year of attending classes at a community college and one to three years after they left the college is presented in **Table 2**. Match rates are shown for all students in the sample and for those enrolled in occupational and non-occupational education programs. Individuals were classified as occupational students if they completed six or more units of SAM level A, B, or C classes in the same four-digit occupational major TOP code during the last two years they attended their community college. (A brief description of SAM level A,B, or C courses and TOP codes is provided on page 8 of this report.)

TABLE 2

PERCENTAGE OF FORMER OCCUPATIONAL AND NON-OCCUPATIONAL EDUCATION STUDENTS FOR WHOM WAGE RECORD DATA WERE AVAILABLE ONE TO THREE YEARS AFTER LEAVING COLLEGE
(Data are combined for students leaving college during the 1990-91 and 1991-92 academic years.)

		Match Rate		
	N	Last Year in College	First Year Out of College	Third Year Out of College
All Students	173,535	78%	75%	69%
All Occup. Students	27,613	81%	78%	72%
All Non-Occup. Students	145,922	78%	75%	68%

Of the 173,535 students in this study, UI wage record data were available for 78% of the students in the year they last attended college, 75% of the students in their first year after leaving college; and 69% of the former students in their third year out of college. The match rates were slightly higher for those in occupational education programs than for those in non-occupational programs during their last year in college (81% vs. 78%); the first year out of college (81% vs. 78%); and the third year out of college (78% vs. 75%).

The findings in **Table 2** show that UI wage record data are available for the vast majority of students one-to-three years after they last attended their community college. Individuals for whom UI wage record data were not available include those who (1) were not in the labor force; (2) were employed but were not covered by California Unemployment Insurance (employed by the federal government or armed forces, self-employed or received all earnings through commissions); and (3) former students who moved out of California. As previously noted, since this study was completed, EDD has entered into agreements with the U.S. Office of Management Personnel and the U.S. Department of Defense to add employment job title and wage record data to PEETS for California residents who are federal civilian employees or who are enlisted in the military. The addition of this information will increase the percentage for former community college students for whom post-education employment data are available.

Relationship Between Educational Attainment and Subsequent Employment Rates and Wages

The data presented in **Table 3** show the relationship between educational attainment and subsequent employment rates and wages for occupational education students under 25 years of age and for all occupational education students, regardless of age, who worked four quarters in a given year. As previously noted, all students were included in the occupational education program category if they completed six or more units of occupational education courses (California Community College Student Attendance Manual, C Level Courses) in the same four-digit vocational Taxonomy of Programs (TOP) code area during the last two years they attended a California community college. To illustrate, a student who completed 12 units of coursework, and six of those units were in electronics, would be classified as an occupational education student. However, if the student had completed three of his or her 12 units in electronics, three in drafting and the remaining six units in non-occupational areas, the individual would have been classified as a non-occupational education student.

Occupational program students were placed into one of the following five educational attainment categories:

- **0 units completed with a grade of "C" or higher.**
  (These students enrolled in one or more occupational education classes but withdrew from college without completing any courses.)
- **1-11.9 units completed with a grade of "C" or higher.**
- **12-23.9 units completed with a grade of "C" or higher.**
- **24 or more units completed but no degree or certificate.**
- **Earned an associate degree or college certificate while attending the community college in which they were last enrolled.**

Although the data are for students in an occupational education program, the units completed include all occupational and non-occupational classes listed on a student's transcript that were completed with a passing grade. Separate data analyses were conducted for students under 25 years of age and for students in all age groups. The analyses were conducted separately for students in the younger age group to control for differences in wages resulting from the amount of time younger and older students were in the labor market.

The column labeled "**% Employed**" represents the percentage of students who worked all four quarters in the year examined. The column labeled "**% Change**" represents the increase in wages and employment rates from the last year in college to the third year out of college. The column labeled "**percent change**" shows the gains in wages and employment rates from the last year the students attended a community college (baseline data) to the third year out of college.

TABLE 3

Gains in Wages and Employment Rates From Last Year in College to Third Year after Leaving College for Students in Occupational Education Programs Who Worked Four Quarters in a Year (In 1994 Dollars)

	Students Under 25 Years of Age Worked Four Quarters*				All Ages Worked Four Quarters			
Educational Attainment	N	Last Year in College	Third Year Out of College	% Change**	N	Last Year in College	Third Year Out of College	% Change**
0 Units Completed	797							
Annual Wages		$14,093	$18,326	30%	2,709	$21,143	$23,442	11%
% Employed*		55%	63%	15%		47%	66%	40%
1-11.9 Units Completed	3,338							
Annual Wages		$14,940	$20,146	35%	15,873	$21,993	$24,902	14%
% Employed*		66%	67%	2%		51%	72%	41%
12-23.9 Units Completed	1,650							
Annual Wages		$14,630	$20,551	43%	5,664	$21,176	$24,717	17%
% Employed*		65%	67%	3%		50%	75%	50%
24+ Units Completed	2,657							
Annual Wages		$13,273	$19,451	47%	7,186	$20,694	$24,176	17%
% Employed*		65%	69%	6%		42%	71%	69%
Degree/Certificate Earned	525							
Annual Wages		$13,689	$25,866	89%	2,742	$20,581	$30,158	47%
% Employed*		71%	75%	6%		44%	80%	82%

*__Note__. Percent employed reflects the percentage of former students who worked four quarters in that year.

**__Note__. Percent change represents the change from last year attended college to third year after leaving college.

The data presented in Table 3 reveal that:

1. In the third year after leaving the community college, the wages of students in occupational education programs who earned a certificate or an associate degree were substantially higher than those of occupational education students in each of the other educational attainment categories. The difference in third year out of college wages was most pronounced between students who earned a degree/certificate and those who withdrew from college without completing any units with a grade of "C" or higher.

   To illustrate, the average third-year out-of-college wages of occupational education students 24 years of age or younger who earned an associate degree or certificate were 41% greater than the wages of those who withdrew from college before completing any units ($25,866 vs. $18,326). Similarly, among all occupational education students, those who achieved an associate degree or certificate had an average third-year out-of-college annual wage of $30,158 compared to $24,176 for those who completed 24 or more units but no degree, and $23,442 for students who withdrew from college without completing any units of coursework.

2. Students 24 years of age or younger who earned an associate degree/certificate experienced a 89% gain in wages from their last year in college to the third year out of college. This four-year increase in the average wages of those who achieved an associate degree or certificate was nearly twice as high as that experienced by non-degree/certificate completers who earned 24 or more units of college course work (89% vs. 47%), and almost three times as great as the increase in wages acquired by those who withdrew from college without completing any courses (89% vs. 30%).

3. Among all occupational education students (not controlling for age), those who obtained an associate degree or certificate registered a 47% gain in wages from their last year in college to their third year out of college. This four-year increase in the average annual wages of those who achieved an associate degree or certificate was nearly three times as high as that realized by students who completed 24 or more units but no degree (47% vs. 17% increase in annual wages), and over four times greater than those who withdrew from college without completing any units with a passing grade (47% vs. 11% increase in annual wages).

4. The greater the number of units completed, the greater the increase in wages received over the four-year time period examined (last year in college to three years after college). There was, however, no difference in the four-year wage gains between students in the 12-23.9 and 24-plus units completed categories.

5. Students who earned an associate degree/certificate were more likely to have worked all four quarters in their third year out of college than those in the other educational attainment categories. For example, 80% of those with associate degrees/certificates were employed all four quarters three years after they last attended college compared to 71% of those who left their community college after they completed 24 or more units, and 66% for students who withdrew from college without completing any courses.

6. The differences in annual third-year out-of-college wages and year-round employment rates were not great among the former students in the 1-11.9, 12-23.9 and 24-plus units completed groups. The absence of larger differences in wages among these groups of students could possibly be attributed to the fact that the units completed included all occupational and non-occupational courses taken, including pre-collegiate basic skills and ESL classes. Therefore, it cannot be assumed that students in the 24 or more units category completed any more occupational education courses than those in the 1-11.9 unit category.

   In retrospect, since the focus of the study is on identifying the relationship between participation in an occupational program and subsequent employment rates and wages, it would have been more appropriate to have placed more weight in these comparisons on the number of collegiate-level occupational education courses completed rather than all courses completed, as was the case in this study. Such an analysis would give a more accurate reading on the relationship between the number of occupational education courses completed and post-college employment rates and wages of students who left college without an associate degree or certificate. A method for placing non-degree/certificate completers into educational attainment categories is presented in the ***Recommendations*** section of this report.

7. The wages for all occupational education students in the study were substantially higher than those of occupational education students 24 years of age or younger during and after college in each of the educational attainment categories. This is because many older students were more likely to have been in the workforce longer than younger students and, as such, have had a greater opportunity to acquire experience and skills needed to earn higher wages. Nevertheless, the finding that three years after college students in occupational education programs who earned an associate degree/certificate had higher wages and had experienced substantially greater gains in their wages than did those in the other educational attainment groups is consistent with what was observed for the younger occupational education students.

EMPLOYMENT RATES AND WAGES OF OCCUPATIONAL EDUCATION STUDENTS BY EDUCATIONAL ATTAINMENT LEVEL FOR THOSE WITH WAGES OF $12,875 OR MORE

The information presented in **Table 4** represents the employment rates and wages by educational attainment level for occupational education students 24 years of age or younger who worked four quarters and who earned $12,875 or more that year. The figure of $12,875 is equal to 50% of the average hourly wage of production workers on manufacturing payrolls in California. It translates into an hourly wage of $6.15 if the individual were employed full-time. The income level of $12,875 is used as a measure to approximate the minimum wage needed for a family to be financially self-sufficient. This figure, rather than the annualized minimum wage, is used in this study in that a family earning the minimum wage would be under the poverty level.

One of the shortcomings of the UI wage record data is that information on the number of hours a person works in a week is not collected . As a consequence, it is not possible to calculate an average hourly wage or to separate individuals who are employed full-time from those employed part-time. Therefore, focusing on former students who worked year-round (four consecutive quarters in a year) and who earned $12,875 or more in a year is a method of excluding from the calculations of annual wages most of the individuals who were not full-time participants in the labor force.

The California Employment Development Department is working with the Chancellor's Office and Santa Barbara City College on a pilot project to obtain the following information from employers of community college occupational education program completers and leavers: average number of hours the former students worked in a week; the job titles of the former student; and the county in which the former student is employed. This pilot project is described on pages 45 and 46 of this report.

TABLE 4

CHANGES IN EARNINGS AND EMPLOYMENT RATES FROM LAST YEAR IN COLLEGE TO THIRD YEAR AFTER LEAVING COLLEGE FOR OCCUPATIONAL EDUCATION STUDENTS UNDER AGE 25 WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE IN A PARTICULAR YEAR (In 1994 Dollars)

	Students Under 25 Years of Age			
Educational Attainment	N	Last Year in College	Third Year Out of College	% Change**
0 Units Completed	797			
Annual Wages		$21,143	$23,442	11%
% Employed*		47%	66%	40%
1-11.99 Units Completed	3,338			
Annual Wages		$21,937	$24,902	14%
% Employed*		51%	72%	41%
12-23.99 Units Completed	1,650			
Annual Wages		$21,176	$24,717	17%
% Employed*		50%	75%	50%
24+ Units Completed	2,657			
Annual Wages		$20,694	$24,176	17%
% Employed*		42%	71%	69%
Degree/Certificate	525			
Annual Wage		$20,581	$30,158	47%
% Employed*		44%	80%	82%

*__Note__. Percent employed represents the percentage of former students who worked four quarters in that year and earned $12,875 or more.

**__Note__. Percent change from last year attended college to third year after leaving college.

The data presented in Table 4 demonstrate that:

1. In the third year after leaving college, the average wage of occupational education program students under 25 years of age who earned an associate degree/certificate was significantly greater than those of their counterparts in the other educational attainment categories. The largest difference in third year out of college wages was between those who earned an associate degree/certificate and those who withdrew from college without successfully completing any classes ($30,158 vs. $23,442, a 29% difference in annual wages).

2. Students under 25 years of age who achieved an associate degree/certificate experienced much greater gains in their wages from their last year in college to their third year out of college than those who left college without a degree/certificate. To illustrate, during the four-year time frame of this study (last year in college to three years after leaving college), students who received an associate degree/certificate had an average gain in their wages of 47% compared to gains of 17% for those who completed 24 or more units but no degree/certificate, and 11% for participants who left college without completing any classes.

3. Students who earned an associate degree/certificate were much more likely than those in the other educational attainment level categories to have earned $12,875 or more in their third year out of college and to have realized greater gains in their wages from their last year in college to their third year out of college. To illustrate, among students who earned $12,875 or more in their last year in college, increases in wages during the four-year period studied (last year in college to third year out of college) ranged from a high of 47% for those with an associate degree/certificate, to 14% for those who left the college after completing between 1 and 11.9 units, to a low of 11% for individuals who withdrew from college without completing any courses with a passing grade.

   As illustrated in **Table 5**, somewhat similar relationships were observed between educational attainment levels and post-college employment rates and wages for all occupational education students (not controlling for age) who worked four quarters and earned $12,875 or more.

TABLE 5

CHANGES IN EARNINGS AND EMPLOYMENT RATES FROM LAST YEAR IN COLLEGE TO THIRD YEAR AFTER LEAVING COLLEGE FOR ALL STUDENTS IN OCCUPATIONAL EDUCATION PROGRAMS WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE

(In 1994 Dollars)

		Worked Four Quarters		
Educational Attainment	N	Last Year in College	Third Year Out of College	% Change**
0 Units Completed	2,709			
Annual Wages		$29,673	$31,109	5%
% Employed*		74%	81%	10%
1-11.9 Units Completed	15,873			
Annual Wages		$33,538	$35,629	5%
% Employed*		72%	77%	7%
12-23.9 Units Completed	5,664			
Annual Wages		$29,964	$32,013	7%
% Employed*		76%	84%	11%
24+ Units Completed	7,186			
Annual Wages		$29,096	$30,781	6%
% Employed*		67%	81%	20%
Degree/Certificate	2,742			
Annual Wage		$28,728	$34,979	22%
% Employed*		72%	90%	25%

*__Note__. Percent employed represents the percentage of former students who worked four quarters in that year.

**__Note__. Percent change from last year attended college to third year after leaving college.

POST-COLLEGE WAGES AND EMPLOYMENT RATES OF ASSOCIATE DEGREE/CERTIFICATE RECIPIENTS BY MAJOR FIELD

The data presented in **Table 6** and **Table 7** document the employment rates and wages for students under 25 years of age who earned an associate degree or certificate in each of nine occupational education programs as well as for students who completed an associate degree or certificate in a non-occupational program. **Table 8** and **Table 9** contain the same information as is in **Table 6** and **Table 7** for all occupational education students, regardless of age. Although data were available for all occupational program areas (four digit TOP Codes) offered at the 18 community colleges in this study, the large size of the data base resulted in the decision to examine the nine major fields in which the highest number of degrees and certificates were awarded.

Procedures for Assigning Students to a Major

Students were assigned to an occupational education major if they had completed a minimum of six units in SAM A, B and/or C level courses in the last two years at the college. Students who completed fewer than six units of SAM A, B and/or C coursework in a particular four digit TOP Code during their last two years at the college were placed into the non-occupational education program category.

In those instances where a student completed an equal number of units in two or more occupational education TOP Codes, the following procedures were used to assign the student to a TOP code (major). Students were assigned to the TOP Code in which they had completed the greatest number of SAM A courses (apprenticeship courses). If a tie still existed, the students were assigned to the TOP Code in which they complete the highest number of SAM B courses (advanced courses in the major), followed by the number of SAM C courses (introductory courses in the major). If the tie in the number of units completed could not be broken by the level of coursework taken, a random method was used to assign the student to a particular TOP Code major field.

TABLE 6

POST-COLLEGE EMPLOYMENT RATES AND WAGES BY MAJOR FIELD FOR STUDENTS UNDER 25 YEARS OF AGE WHO EARNED AN ASSOCIATE DEGREE* (In 1994 Dollars)

		Worked Four Quarters			
Major Field/Wages	N	Last Year in College	1st Year Out	3rd Year Out	% Change***
All Occupational Programs	525	$14,252	$16,814	$20,260	42%
% Employed**		65%	66%	68%	5%
Non Occupational Programs	3,065	$10,333	$11,963	$15,513	50%
% Employed**		66%	59%	65%	(-2%)
Business	99	$12,768	$15,793	$18,233	43%
% Employed**		70%	69%	71%	1%
Accounting	39	$16,637	$18,002	$15,609	(7%)
% Employed**		65%	66%	69%	6%
Secretarial Studies	37	$11,702	$11,918	$18,656	59%
% Employed**		41%	67%	65%	59%
Comp. Sci./Information Systems	16	$13,202	$13,044	$19,830	50%
% Employed**		75%	69%	54%	39%
Electronics	53	$13,088	$18,173	$22,240	70%
% Employed		66%	69%	77%	17%
Graphic Arts	20	$12,297	$15,540	$19,809	61%
% Employed**		59%	53%	77%	31%
Nursing	109	$14,610	$31,848	$38,629	164%
% Employed**		77%	90%	87%	13%
Administration of Justice	114	$13,980	$19,717	$26,348	88%
% Employed**		80%	71%	75%	(-6%)
Human Services	37	$11,546	$14,206	$17,002	47%
% Employed		67%	48%	65%	(-3%)

*Note. The data are based on students who received an associate degree or certificate in 1990-91 or 1991-92.
**Note. Percent employed represents the percentage of students who worked four quarters that year.
***Note. Percent change from last year in college to third year out of college.

Summary of Some Major Findings Included in Table 6 for Students Under 25 Years of Age Who Received a Degree or Certificate at One of the 18 California Community Colleges Included in This Study

1. In each of the years examined (last year in college and first and third year after college), students who received a degree/certificate in an occupational major had higher wages than those who earned a degree/certificate in a non-occupational program area. The one exception to this finding was that graduates of secretarial studies programs had slightly lower earnings than non-occupational program graduates in their first year out of college. The percentage gain in wages from the last year in college to the third year after leaving the community college were comparable (within five percent) for graduates of occupational and non-occupational programs.

2. The average wage for students under 25 years of age who received an associate degree or a certificate was $16,814 in their first year out of college and $20,260 in their third year after leaving their community college. These average wages may be somewhat understated in that a number of the degree/certificate achievers may have continued their studies at a four-year college or university and, as such, may not have been employed full-time or employed in a job related to their lower division training.

3. The third year-out-of-college wages for degree/certificate recipients under 25 years of age ranged from a high of $38,629 for graduates of nursing-related majors, to $22,240 for those in electronics-related fields, to $17,002 for individuals in human services-related fields (e.g., early childhood education, cosmetology, teacher aides).

   The lowest third year after college wages were earned by graduates of accounting programs. This may be due to the fact that many graduates of community college accounting programs continue their studies at four-year colleges and universities to earn a CPA (a five-year program) or to complete a bachelor's or master's degree in accounting or business. Thus, the wages of these students may not accurately reflect the actual post-college wages of graduates of community college accounting programs in that they may be employed in part-time jobs while completing their upper division or graduate coursework.

   A more accurate accounting of the post-college success of students would be possible if the student management information systems for each of the postsecondary education segments in California (i.e., community colleges, CSUs, UCs, and private colleges and universities) were linked with one another and with the UI wage record data.

As noted in the **Recommendations** section of this report, this would allow for a more accurate determination of post-college job placement and transfer rates.

4. With the exception of accounting, there was over a 40% gain in wages from the last year in college to the third year after college for degree/certificate holders in each of the occupational education programs examined. In fact, program completers in six of the nine majors considered in this study experienced an average increase in wages of 50% or more in the four-year period examined.

   Table 7 shows the employment rates and wages for students under 25 years of age who received a degree or certificate, worked four quarters (year-round) in a particular year and had an annual wage of $12,875 or more in the year examined. **Table 7** differs from **Table 6** in that it only includes those who earned $12,875 or more in one or more of the years considered in this study.

TABLE 7

POST-COLLEGE EMPLOYMENT RATES AND WAGES BY MAJOR FIELD FOR STUDENTS UNDER 25 YEARS OF AGE WHO EARNED AN ASSOCIATE DEGREE AND WHO EARNED $12,875 OR MORE*
(In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Major Field/Wages	N	Last Year in College	1st Year Out	3rd Year Out	% Change***
All Occupational Programs	525	$21,328	$22,817	$24,952	17%
% Employed**		48%	60%	72%	50%
Non Occupational Programs	3,065	$19,131	$19,795	$22,015	15%
% Employed**		26%	38%	53%	104%
Business	99	$20,565	$20,989	$24,132	17%
% Employed**		36%	61%	62%	72%
Accounting	39	$22,365	$20,898	$17,763	(26%)
% Employed**		60%	74%	70%	17%
Secretarial Studies	37	$15,419	$15,180	$20,235	31%
% Employed**		44%	50%	87%	98%
Comp. Sci./ Information Systems	16	$17,136	$18,901	$25,217	47%
% Employed**		56%	33%	71%	27%
Electronics	53	$19,804	$23,982	$24,036	21%
% Employed**		40%	67%	87%	118%
Graphic Arts	20	$18,890	$19,588	$23,863	26%
% Employed**		40%	67%	77%	93%
Nursing	109	$22,772	$34,343	$40,010	76%
% Employed**		44%	90%	95%	116%
Administration of Justice	114	$20,097	$25,738	$30,202	50%
% Employed**		48%	64%	83%	73%
Human Services	37	$18,660	$18,015	$25,273	35%
% Employed**		39%	54%	47%	21%

*Note. The data are based on students who received an associate degree or certificate in 1990-91 or 1991- 92.

**Note. Percent employed represents the percentage of students who worked four quarters that year and who earned $12,875 or more.

***Note. Percent change from last year in college to third year out of college.

Summary of Some Major Findings Included in Table 7 for Students Under 25 Years of Age Who Received a Degree or Certificate, Worked Four Quarters and Earned $12,875 or More

1. Almost three-fourths (72%) of the students 25 years of age or younger who earned an associate degree/certificate in a occupational education area had wages of $12,875 or more three years after they left their community college. The percentage of program completers who three years after leaving college had wages of $12,875 or more ranged from a high of 95% for those in nursing-related fields, to 87% for those who majored in electronics or secretarial studies, to 83% for administration of justice majors, to 47% for former students who majored in a human services field.

2. The average wage of students who completed an associate degree or certificate in a occupational major and who earned $12,875 or more in their first year out of college was $22,817. The average wage of these former students three years after leaving their community college was $24,952. This translates into a four-year increase in wages of 17% after controlling for inflation.

The data presented in **Tables 8** and **9** are for all students, regardless of age, who earned an associate degree or certificate in an occupational program major and for associate degree/certificate recipients in each of the nine occupational education programs considered in this study.

TABLE 8

POST-COLLEGE EMPLOYMENT RATES AND WAGES BY MAJOR FIELD FOR ALL OCCUPATIONAL STUDENTS WHO EARNED AN ASSOCIATE DEGREE* (In 1994 Dollars)

Major Field	N	Last Year in College	Worked Four Quarters 1st Year Out	Worked Four Quarters 3rd Year Out	% Change***
All Occupational Programs	2,742				
Annual Wages		$22,956	$28,939	$32,348	41%
% Employed**		73%	78%	78%	7%
Business	371				
Annual Wages		$26,970	$28,622	$30,388	13%
% Employed**		77%	79%	75%	(-2%)
Accounting	224				
Annual Wages		$22,920	$23,169	$23,720	3%
% Employed**		67%	68%	75%	12%
Secretarial Studies	126				
Annual Wages		$19,211	$19,878	$22,827	18%
% Employed**		61%	65%	75%	24%
Comp. Sci./Information Systems	113				
Annual Wages		$27,383	$25,97	$30,079	10%
% Employed**		67%	77%	80%	19%
Electronics	454				
Annual Wages		$30,685	$25,974	$30,054	(-2%)
% Employed**		80%	77%	76%	(-5%)
Graphic Arts	41				
Annual Wages		$18,462	$20,113	$21,449	16%
% Employed		59%	53%	65%	10%
Nursing	973				
Annual Wages		$18,623	$31,571	$37,131	99%
% Employed**		77%	90%	87%	13%
Administration of Justice	218				
Annual Wages		$22,994	$27,449	$31,517	37%
% Employed**		82%	77%	76%	7%
Human Services	200				
Annual Wages		$14,544	$16,029	$18,121	25%
% Employed		67%	48%	65%	(-3%)

*Note. The data are based on students who received an associate degree or certificate in 1990-91 or 1991-92.

**Note. Percent reported represents the percentage of the former students who worked four quarters that year.

***Note. Percent change from last year in college to third year out of college.

TABLE 9

POST-COLLEGE EMPLOYMENT RATES AND WAGES BY MAJOR FIELD FOR ALL OCCUPATIONAL STUDENTS WHO EARNED AN ASSOCIATE DEGREE AND EARNED $12,875 OR MORE*
(In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Major Field	N	Last Year in College	1st Year Out	3rd Year Out	% Change***
All Occupational Programs	2,742				
Annual Wages		$28,728	$32,278	$34,979	22%
% Employed**		72%	86%	90%	25%
Business	371				
Annual Wages		$33,312	$25,578	$34,027	2%
% Employed**		75%	84%	86%	15%
Accounting	224				
Annual Wages		$26,688	$25,260	$34,027	27%
% Employed**		79%	86%	85%	8%
Secretarial Studies	126				
Annual Wages		$25,451	$23,917	$25,762	1%
% Employed**		63%	72%	83%	32%
Comp.Sci./ Information Systems	113				
Annual Wages		$31,813	$31,94	$32,191	1%
% Employed**		81%	75%	91%	12%
Electronics	454				
Annual Wages		$33,400	$34,706	$35,685	7%
% Employed**		89%	92%	94%	6%
Graphic Arts	41				
Annual Wages		$27,809	$24,393	$25,024	(-10%)
% Employed**		53%	75%	80%	51%
Nursing	973				
Annual Wages		$24,374	$33,814	$38,689	59%
% Employed**		44%	90%	95%	116%
Administration of Justice	218				
Annual Wages		$30,775	$33,249	$35,572	16%
% Employed**		66%	76%	89%	35%
Human Services	200				
Annual Wages		$19,615	$20,594	$23,190	19%
% Employed**		39%	54%	47%	21%

*__Note__. The data are based on students who received an associate degree or certificate in 1990-91 or 1991-92.
**__Note__. Percent employed represents the percentage of the former students who worked four quarters that year.
***__Note__. Percent change from last year in college to third year out of college

As previously noted, when not controlling for age it is difficult to interpret post-college wages and employment rates for community college students. This is because many older students who attend college must hold a job or jobs that generate enough income to support themselves and/or their families. Thus, the economic benefit of attending a community college is not as readily discernible for older students as it is for younger students attending classes to prepare for entry into a career. Nevertheless, as evidenced in **Table 8**, after controlling for inflation, there was a 41% gain in average wages for all occupational program associate degree/certificate recipients from the last year in college to the third year out of college. The gains in wages during the four-year period studied were most pronounced for graduates of nursing-related fields (99%), followed by administration of justice (37%), human services (25%), secretarial studies (18%), graphic arts (16%), business (13%), electronics (11%), and computer science/information systems (10%).

An important finding in **Table 9** is that 90% of the community college degree/certificate recipients who worked four quarters three years after they last attended the community college from which they graduated earned $12,875 or more that year. With the exception of program completers in human services majors, 80% or more of the degree/certificate holders who worked four quarters in the third year out of college had wages of $12,875 or more.

POST-COLLEGE WAGES FOR STUDENTS WHO RECEIVED FINANCIAL AID (ECONOMICALLY DISADVANTAGED) AND THOSE WHO DID NOT RECEIVE FINANCIAL AID

Table 10 provides a comparison of the average wages for occupational education program students who received financial aid while in college (economically disadvantaged) with the wages of those who did not receive financial aid while attending college (non-economically disadvantaged). The comparisons of wages by economic status category are shown for students with and without an associate degree or certificate.

TABLE 10

POST-COLLEGE WAGES BY ECONOMIC STATUS UPON ENTERING COLLEGE FOR OCCUPATIONAL EDUCATION STUDENTS*
(In 1994 Dollars)

		Worked Four Quarters			
Economic Status	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Economically Disadvantaged					
No Degree/Certificate	2,454	$13,710	$18,347	$21,119	54%
Degree/Certificate	440	$14,659	$28,054	$30,415	107%
Non-Economically Disadvantaged					
No Degree/Certificate	28,979	$26,707	$28,488	$30,518	14%
Degree/Certificate	2,302	$23,979	$29,074	$32,684	36%
Economically Disadvantaged, Under 25					
No Degree/Certificate	1,013	$11,552	$14,331	$17,298	49%
Degree/Certificate	106	$12,382	$19,928	$23,754	100%
Non-Economically Disadvantaged, Under 25					
No Degree/Certificate	7,430	$14,515	$17,082	$20,622	42%
Degree/Certificate	419	$13,908	$21,616	$26,554	91%

*Note. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**Note. Percent change from last year in college to third year out of college.

The findings presented in Table 10 reveal that:

1. The average annual wages of non-economically disadvantaged students were substantially higher than those of students who were economically disadvantaged while in college in each of the three time periods examined. This finding held for all students and for those who were under 25 years of age while in college. However, economically disadvantaged students who earned an associate degree or certificate achieved a 107% increase in their annual wages from their last year in college to their third year out of college. This four-year gain in wages of 107% among economically disadvantaged students who earned an associate degree is substantially greater than the gains achieved by non-economically disadvantaged students who earned an associate degree or certificate (36%) or who left college without an associate degree or certificate (14%).

2 Economically disadvantaged students under 25 years of age who earned an associate degree or certificate experienced a 100% increase in wages from their last year in college to their third year out of college. This increase in wages enabled the economically disadvantaged students who earned a degree or certificate to surpass the third year out of college wages of non-economically disadvantaged students who did not earn an associate degree or certificate ($23,745 vs. $20,622). As noted in **Table 11**, similar results were observed among those students who earned $12,875 or more in a given year.

TABLE 11

POST-COLLEGE WAGES BY ECONOMIC STATUS UPON ENTERING COLLEGE FOR OCCUPATIONAL EDUCATION STUDENTS WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE*
(In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Economic Status	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Economically Disadvantaged					
No Degree/Certificate	2,454	$21,171	$25,235	$26,509	25%
Degree/Certificate	440	$20,366	$31,554	$34,027	67%
Non-Economically Disadvantaged					
No Degree/Certificate	28,979	$31,181	$32,854	$34,142	9%
Degree/Certificate	2,302	$29,746	$32,387	$55,153	95%
Economically Disadvantaged, Under 25					
No Degree/Certificate	1,013	$19,090	$21,547	$22,633	3%
Degree/Certificate	106	$18,662	$26,623	$28,392	52%
Non-Economically Disadvantaged, Under 25					
No Degree/Certificate	7,430	$21,479	$22,291	$25,195	17%
Degree/Certificate	419	$20,685	$26,877	$30,611	47%

*__Note.__ The data are based on students who did not return to their college in 1990-91 or 1991- 92.
**__Note.__ Percent change from last year in college to third year out of college.

POST-COLLEGE WAGES FOR STUDENTS WHO ENTERED COLLEGE WITH AND WITHOUT LIMITED ENGLISH PROFICIENCY

Table 12 shows the average annual wages for students who were enrolled in an English as a second language (ESL) class (Limited English Proficient or LEP) and those who did not enroll in an ESL course (English Proficient) while in college. The data are presented by educational attainment level for all students and for students under 25 years of age.

TABLE 12

POST-COLLEGE WAGES BY ENGLISH PROFICIENCY LEVEL UPON ENTERING COLLEGE FOR ALL STUDENTS AND FOR THOSE RECEIVING A DEGREE OR CERTIFICATE*
(In 1994 Dollars)

		Worked Four Quarters			
English Proficiency Level	N	Last Year in College	1st Year Out	3rd Year Out	% Change **
Limited English Proficient					
No Degree/Certificate	2,403	$18,094	$21,152	$24,090	33%
Degree/Certificate	365	$18,988	$29,410	$32,538	71%
English Proficient					
No Degree/Certificate	29,030	$26,750	$28,503	$30,439	14%
Degree/Certificate	2,377	$23,534	$28,870	$32,315	37%
Limited English Proficient Under 25					
No Degree/Certificate	1,359	$13,207	$16,408	$19,917	51%
Degree/Certificate	117	$13,726	$20,830	$25,468	86%
English Proficient Under 25					
No Degree/Certificate	7,084	$13,521	$22,818	$27,065	100%
Degree/Certificate	408	$14,479	$28,503	$30,439	110%

*__Note__. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**__Note__. Percent change from last year attended college to third year after leaving college.

The information presented in Table 12 shows that:

1. Individuals who entered college with limited English proficiency skills and who earned an associate degree or certificate experienced a 71% increase in wages from their last year in college to their third year out of college. This 71% increase in earnings among LEP students who earned an associate degree or certificate was nearly twice as high as the gains registered by non-LEP students with a degree or certificate (71% vs. 37%), and more than five times higher than the wages for non-LEP students who did not achieve an associate degree or certificate (71% vs. 14%).

2. The third year out of college wages of LEP students who earned an associate degree or certificate were higher than those of LEP and non-LEP students who left their community college without completing an associate degree or certificate.

3. For students under 25 years of age, the gains in wages from the last year in college to the third year out of college were highest among non-LEP students who earned an associate degree or certificate (110%). LEP students who left college without achieving a degree or certificate had the smallest increase in wages from their last year in college to the third year out of college (40%).

As noted in **Table 13** similar results were observed among those students who earned $12,875 or more in a given year.

TABLE 13

POST-COLLEGE WAGES BY ENGLISH PROFICIENCY STATUS UPON ENTERING COLLEGE FOR ALL OCCUPATIONAL EDUCATION STUDENTS WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE*
(In 1994 Dollars)

	Worked Four Quarters and Earned $12,875 or More				
English Proficiency Level	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Limited English Proficient					
No Degree/Certificate	2,403	$25,391	$27,298	$28,491	12%
Degree/Certificate	365	$24,188	$33.533	$35,171	45%
English Proficient					
No Degree/Certificate	29,030	$31,965	$32,907	$34,164	7%
Degree/Certificate	2,377	$29,350	$32,100	$34,952	19%
Limited English Proficient Under 25					
No Degree/Certificate	1,359	$20,438	$22,900	$24,555	20%
Degree/Certificate	117	$20,919	$26,002	$29,904	43%
English Proficient Under 25					
No Degree/Certificate	7,084	$21,493	$22,890	$25,041	17%
Degree/Certificate	408	$19,526	$29,353	$30,883	58%

***Note.** The data are based on students who did not return to their college in 1990-91 or 1991-92.
****Note**. Percent change from last year attended college to third year after leaving college.

POST-COLLEGE EMPLOYMENT RATES FOR STUDENTS WHO ENTERED COLLEGE WITH AND WITHOUT ENGLISH PROFICIENCY SKILLS

The data presented in **Table 14** documents the employment rates for students who were enrolled in an ESL class (Limited English Proficient or LEP) and students who did not enroll in an ESL class in college (English Language Proficient). The employment rates are shown for associate degree/certificate and non-associate degree/certificate recipients for occupational education students.

TABLE 14

POST-COLLEGE EMPLOYMENT RATES BY ENGLISH PROFICIENCY STATUS UPON ENTERING COLLEGE FOR ALL OCCUPATIONAL EDUCATION STUDENTS AND FOR THOSE RECEIVING A DEGREE OR CERTIFICATE (In 1994 Dollars)

		Worked Four Quarters		
English Proficiency Level	N	Last Year in College	1st Year Out	3rd Year Out
Limited English Proficient				
No Degree/Certificate	2,403	69%	71%	71%
Degree/Certificate	365	74%	76%	76%
Non-Limited English Proficient				
No Degree/Certificate	29,030	74%	75%	74%
Degree/Certificate	2,377	73%	79%	77%

*__Note.__ The data are based on students who did not return to their college in 1990-91 or 1991-92.
**__Note__. Percent change from last year attended college to third year after leaving college.

The data presented in **Table 14** demonstrate that for each of the years examined, the percentage of LEP students employed four quarters was comparable to the year-round employment rates of non-LEP students.

POST-COLLEGE WAGES BY ACADEMIC PREPARATION LEVEL UPON ENTERING COLLEGE FOR ALL OCCUPATIONAL EDUCATION STUDENTS AND FOR THOSE RECEIVING A DEGREE OR CERTIFICATE

Data presented in **Table 15** document the wages for students who enrolled or were advised to enroll in a pre-collegiate English and/or math course (**academically disadvantaged**) and those of students not in need of remediation in English or math (**non-academically disadvantaged**). The data are presented by educational attainment level for all students and for students under 25 years of age.

TABLE 15

POST-COLLEGE WAGES BY ACADEMIC PREPARATION LEVEL UPON ENTERING COLLEGE FOR ALL STUDENTS AND FOR THOSE RECEIVING A DEGREE OR CERTIFICATE* (In 1994 Dollars)

		Worked Four Quarters			
Academic Preparation	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Academically Disadvantaged					
No Degree/Certificate	3,134	$19,751	$21,877	$22,973	16%
Degree/Certificate	263	$19,589	$25,350	$28,396	45%
Non-Academically Disadvantaged					
No Degree/Certificate	18,190	$26,413	$28,415	$30,694	16%
Degree/Certificate	1,932	$23,514	$30,046	$33,366	42%
Academically Disadvantaged					
Under 25, No Degree/Certificate	1,457	$13,362	$15,949	$18,994	41%
Under 25, Degree/Certificate	70	$12,987	$25,898	$31,306	141%
Non-Academically Disadvantaged					
Under 25, No Degree/Certificate	4,477	$13,886	$16,539	$20,202	46%
Under 25, Degree/Certificate	327	$13,379	$20,719	$25,406	90%

*__Note__. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**__Note__. Percent change from last year attended college to third year after leaving college.

The information included in Table 15 demonstrates that:

1. The wages of non-academically disadvantaged students were much higher than those of academically disadvantaged students in each of the three time periods examined. However, the last year in college to third year out-of-college gains in wages for academically disadvantaged students who earned a degree or certificate were substantially greater than that achieved by non-academically disadvantaged students who did not receive a degree or certificate (45% vs. 16%) and by academically disadvantaged students who left college without earning an associate degree or certificate (45% vs. 16%).

2. The greatest gap in third year out-of-college wages occurred between non-academically disadvantaged students with a degree or certificate and academically disadvantaged students who exited college without a degree or certificate ($33,366 vs. $22,973).

3. Although their wages in college were comparable, the third year out of college wages of academically disadvantaged students who earned a degree or certificate were much higher than those of academically disadvantaged students who left college without achieving an associate degree or certificate ($28,396 vs. $22,973).

4. Students under 25 years of age who entered college in need of academic remediation (academically disadvantaged) and who earned an associate degree or certificate increased their wages during the four-y ar time period studied by 141%. These academically disadvantaged students who completed a degree or certificate had higher third year out-of-college wages than non-academically disadvantaged students with an associate degree or certificate ($31,303 vs. $25,406) and non-academically disadvantaged students without an associate degree or certificate ($31,303 vs. $20,202). The lowest third year out-of-college wages for students under 25 years of age was received by academically disadvantaged students who did not earn an associate degree or certificate ($18,994).

5. Similar findings as those noted above were observed for students who worked four quarters and who earned $12,875 or more in a given year. These findings are reported in **Table 16**.

TABLE 16

POST-COLLEGE WAGES BY ACADEMIC PREPARATION LEVEL UPON ENTERING COLLEGE FOR ALL OCCUPATIONAL EDUCATION STUDENTS AND FOR THOSE WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE*
(In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Academic Preparation	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Academically Disadvantaged					
No Degree/Certificate	3,134	$25,803	$27,062	$27,496	7%
Degree/Certificate	263	$25,437	$28,932	$31,416	24%
Non-Acad. Disadvantaged					
No Degree/Certificate	18,190	$32,079	$33,106	$34,489	8%
Degree/Certificate	1,932	$29,236	$33,201	$35,977	23%
Academically Disadvantaged Under 25					
No Degree/Certificate	1,457	$20,103	$21,850	$23,814	18%
Degree/Certificate	70	$19,434	$33,783	$35,382	82%
Non-Acad. Disadvantaged Under 25					
No Degree/Certificate	4,477	$21,350	$22,946	$24,212	18%
Degree/Certificate	327	$19,495	$25,870	$30,307	55%

*__Note__. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**__Note__. Percent change from last year attended college to third year after leaving college.

POST-COLLEGE WAGES FOR UNDERREPRESENTED AND NON-UNDERREPRESENTED STUDENTS BY EDUCATIONAL ATTAINMENT LEVEL

Table 17 shows the wages received by **underrepresented** and **non-underrepresented** students in their last year in college and one and three years after college for those who received an associate degree or certificate and those who did not earn a degree or certificate. Underrepresented students included all students other than those who identified themselves as white/non-Hispanic or Asian.

TABLE 17

POST-COLLEGE WAGES FOR UNDEREPRESENTED AND NON-UNDERREPRESENTED OCCUPATIONAL EDUCATION STUDENTS*

		Worked Four Quarters			
Ethnic Background	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Underrepresented Students					
No Degree/Certificate	13,763	$24,547	$26,175	$28,381	16%
Degree/Certificate	1,374	$22,664	$26,762	$30,825	36%
Non-Underrepresented Students					
No Degree/Certificate	14,312	$27,578	$26,762	$30,825	36%
Degree/Certificate	1,064	$24,316	$32,376	$34,485	43%
Underrepresented Students Under 25					
No Degree/Certificate	4,074	$14,279	$16,728	$20,016	40%
Degree/ Certificate	287	$13,748	$21,546	$25,489	85%
Non-Underrepresented Students Under 25					
No Degree/Certificate	3,680	$14,279	$17,191	$20,788	46%
Degree/Certificate	180	$14,571	$22,750	$27,486	89%

*Note. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**Note. Percent change from last year attended college to third year after leaving college.

The data in Table 17 reveal that:

1. Non-underrepresented students (white non-Hispanic and Asian) had higher wages than underrepresented students in each of the three years considered in this study. The differences in first and third year out of college annual wages were most pronounced between non-underrepresented students who achieved an associate degree or certificate and underrepresented students who did not earn a degree or certificate.

2. Last year in college to third year out-of-college gains in wages were highest among underrepresented (36%) and non-underrepresented students (43%) who earned an associate degree or certificate and lowest among underrepresented (16%) and non-underrepresented students (14%) who left their community college without a degree or certificate.

3. For those under 25 years of age, the gains in wages from the last year in college to the third year out-of-college were nearly twice as high for underrepresented and non-underrepresented students who earned an associate degree or certificate than for students without a degree or certificate.

4. Underrepresented students who completed an associate degree or certificate had higher wages in their first and third year out of college than non-underrepresented students who left college before receiving a degree or certificate.

5. The pattern of differences in wages noted above for students who worked year-round also held for those who worked four quarters and earned $12,875 or more in a year (**Table 18**).

TABLE 18

POST-COLLEGE WAGES FOR UNDEREPRESENTED AND NON-UNDERREPRESENTED STUDENTS WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE*
(In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Ethnic Background	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Underrepresented Students					
No Degree/Certificate	13,763	$29,645	$30,532	$31,183	7%
Degree/Certificate	1,374	$27,492	$30,256	$33,256	21%
Non-Underrepresented Students					
No Degree/Certificate	14,312	$27,492	$30,256	$32,256	17%
Degree/Certificate	1,064	$30,366	$34,874	$37,252	23%
Underrepresented Students, Under 25					
No Degree/Certificate	4,074	$20,848	$22,277	$24,122	16%
Degree/ Certificate	287	$20,883	$27,615	$29,423	41%
Non-Underrepresented Students, Under 25					
No Degree/Certificate	3,680	$21,918	$23,525	$25,858	18%
Degree/Certificate	180	$20,927	$26,873	$31,366	50%

*Note. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**Note. Percent change from last year attended college to third year after leaving college.

POST-COLLEGE WAGES FOR STUDENTS WITH AND WITHOUT A DISABILITY

The wages and employment rates of former students with and without an identified disability while in college are presented in **Table 19**. Although the data are available to do so, students were not placed into groups based on the particular disability with which they were identified.

TABLE 19

POST-COLLEGE WAGES AND EMPLOYMENT RATES FOR STUDENTS WITH A DISABILITY AND WITHOUT A DISABILITY UPON ENTERING COLLEGE* (In 1994 Dollars)

		Worked Four Quarters			
Disability Status	N	Last Year in College	1st Year Out	3rd Year Out	% Change***
All Students					
Disability	580	$19,840	$22,826	$23,464	18%
% Employed**		57%	59%	58%	2%
No Disability	33,595	$26,153	$27,992	$29,993	15%
% Employed**		74%	75%	74%	0%
All Students With Degree/Certificate					
Disability	74	$12,646	$17,064	$20,790	64%
% Employed**		48%	67%	59%	23%
No Disability	2,668	$23,131	$19,195	$32,540	14%
% Employed**		73%	79%	79%	8%
All Students Under 25					
Disability	122	$12,154	$14,436	$15,855	30%
% Employed**		45%	48%	57%	27%
No Disability	8,160	$14,270	$16,834	$20,307	41%
% Employed**		65%	66%	68%	4%
All Students Under 25 With Degree/Certificate					
Disability	12	$9,383	$10,779	$10,723	14%
% Employed**		40%	44%	33%	(-18%)
No Disability	513	$13,738	$21,472	$21,012	42%
% Employed**		72%	73%	76%	5%

*__Note__. The data are based on students who did not return to college in 1990-91 or 1991- 92.
**__Note__. Percent employed four quarters in that year.
***__Note__. Percent change from last year attended college to third year after leaving college.

Among the findings reported in Table 19 are:

1. With one exception, students without a disability had higher wages than those with a disability in each of the three years examined. Similarly, the percentage of individuals who worked four consecutive quarters in each of the three years examined was greater for those without a disability than for those with a disability.

2. The greatest gain in wages from last year in college to third year out of college was among students with a disability who earned an associate degree or certificate (64%). Students with a disability who left college without an associate degree or certificate experienced a gain of 18% in their wages during the four-year time period examined (last year in college to third year out of college).

   As noted in **Table 20** there were substantial gains from the last year in college to the third year out of college in the percentage of students with a disability who worked year-round and who earned $12,875 or more. To illustrate, the last year-in college to third year out-of-college gains in the percentage of the former students who worked year-round and earned $12,875 or more was 78% for those with a disability who completed an associate degree or certificate and 67% for individuals with a disability who were under 25 years of age while in college.

   The information presented in **Table 20** also reveals that: (1) the greatest four-year (last year in college to third year out-of-college) gains in wages were registered by students with a disability who received an associate degree or certificate; and (2) students under 25 years of age with a disability who completed an associate degree or certificate had higher third year out-of-college wages than did those under 25 years of age without a disability who did not achieve an associate degree or certificate ($25,919 vs. $20,175).

TABLE 20

POST-COLLEGE WAGES AND EMPLOYMENT RATES FOR OCCUPATIONAL EDUCATION STUDENTS WITH A DISABILITY AND WITHOUT A DISABILITY WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE* (In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More**			
Disability Status	N	Last Year in College	1st Year Out	3rd Year Out	% Change***
All Students					
Disability	580	$27,790	$27,672	$28,946	4%
% Employed**		62%	76%	75%	20%
No Disability	33,595	$31,616	$32,592	$33,785	7%
% Employed**		77%	81%	85%	10%
All Students With Degree/Certificate					
Disability	74	$19,292	$20,782	$24,305	26%
% Employed**		46%	73%	82%	78%
No Disability	2,668	$28,830	$32,487	$35,139	21%
% Employed**		72%	86%	90%	25%
All Students Under 25 Years of Age					
Disability	122	$21,107	$20,428	$21,629	1%
% Employed		37%	55%	62%	67%
No Disability	8,160	$21,330	$22,836	$24,982	17%
% Employed**		48%	60%	72%	50%
All Students Under 25 With Degree/Certificate					
Disability	12	$16,360	$20,436	$25,919	58%
% Employed**		25%	25%	33%	32%
No Disability	513	$20,613	$26,868	$20,175	(-2%)
% Employed**		45%	71%	80%	78%

*__Note.__ The data are based on students who did not return to their college in 1990-91 or 1991-92.
**__Note.__ Percent employed represents the percentage of students who worked four quarters that year.
***__Note__. Percent change from the last year attended college to the third year after leaving college.

POST-COLLEGE WAGES FOR MALES AND FEMALES BY EDUCATIONAL ATTAINMENT

The wages for males and females by educational attainment level are reported in **Table 21.**

TABLE 21

POST-COLLEGE WAGES BY GENDER FOR ALL OCCUPATIONAL EDUCATION STUDENTS * (In 1994 Dollars)

		Worked Four Quarters			
Gender	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Female					
No Degree/Certificate	18,613	$23,185	$25,000	$26,957	16%
Degree/Certificate	1,830	$20,435	$28,174	$31,705	55%
Under 25, No Degree/Certificate	4,721	$14,149	$16,551	$19,636	39%
Under 25, Degree/Certificate	321	$13,532	$23,027	$26,809	98%
Male					
No Degree/Certificate	12,795	$30,174	$32,202	$34,394	14%
Degree/Certificate	910	$27,185	$30,370	$33,583	24%
Under 25, No Degree/Certificate	3,720	$14,391	$17,661	$21,079	46%
Under 25, Degree/Certificate	204	$13,908	$18,676	$24,328	75%

*Note. The data are based on students who did not return to their college in 1990-91 or 1991-92.
**Note. Percent change from last year in college to third year out of college.

The data shown in Table 21 demonstrate that:

1. The average annual wages of men were higher than those received by women in each of the three years examined. However, the first and third year out-of-college wages of students under 25 years of age were higher for women with an associate degree or certificate than for men with an associate degree or certificate. This finding can be attributed to the high salaries earned by graduates (predominately women) of nursing-related programs.

2. The most dramatic gains in wages from the last year in college to the third year out-of-college occurred among women (98%) and men (75%) under 25 years of age who completed an associate degree or certificate.

3. The gap in third year out-of-college annual wages between males and females was greatest when not controlling for age or educational attainment ($34,294 vs. $26,957). Although the first and third year out-of-college annual wages for males with an associate degree or certificate were higher than those of females with degrees and certificates, the differences were not as pronounced. This is because women who earned an associate degree or certificate experienced a much larger gain in last year in college to third year out-of-college wages than did the men who achieved an associate degree or certificate (55% vs. 24%).

   As illustrated in **Table 22**, somewhat similar findings were observed among men and women who worked year-round and who received wages of $12,875 or more in a particular year.

TABLE 22

POST-COLLEGE WAGES BY GENDER FOR ALL OCCUPATIONAL EDUCATION STUDENTS WHO WORKED FOUR QUARTERS AND EARNED $12,875 OR MORE* (In 1994 Dollars)

		Worked Four Quarters and Earned $12,875 or More			
Gender	N	Last Year in College	1st Year Out	3rd Year Out	% Change**
Female					
No Degree/Certificate	18,613	$32,005	$29,356	$30,711	(-4%)
Degree/Certificate	1,830	$26,582	$31,443	$34,468	30%
Under 25, No Degree/Certificate	4,721	$20,838	$22,132	$23,993	15%
Under 25, Degree/Certificate	321	$21,130	$28,128	$31,249	48%
Male					
No Degree/Certificate	12,795	$31,693	$33,836	$35,921	13%
Degree/Certificate	910	$35,854	$36,938	$37,991	6%
Under 25, No Degree/Certificate	3,720	$21,479	$23,757	$26,228	22%
Under 25, Degree/Certificate	204	$20,865	$24,491	$28,379	36%

*Note. The data are based on students who did not return to their college in 1990-91 or 1991-92.

**Note. Percent change from last year in college to third year out of college.

Although the data are not shown in **Table 22**, the percentage of men and women who worked year-round (all four quarters) and who earned $12,875 or more was comparable in each of the three years examined when controlling for differences in age and educational attainment.

DESCRIPTION OF PILOT PROJECT TO IDENTIFY THE JOB TITLES, NUMBER OF HOURS WORKED PER WEEK AND COUNTY OF EMPLOYMENT

The EDD, California Community Colleges Chancellor's Office, and Santa Barbara City College are conducting a pilot project designed to address the following shortcomings of the UI wage record data:

1. The UI wage record data does not include the job title for the employee. Not knowing the title of the job in which the individual is employed makes it impossible to determine whether students' post-college jobs are in fields related to their occupational education training.

2. The UI wage record data collected each quarter contain the earnings received by an employee during a three-month period. Since the number of hours an employee worked is not reported, it is not possible to determine whether or not the person was employed full-time or how much the employee earned per hour.

3. The UI wage record data do not provide entirely accurate information on the county in which the individual is employed. Currently, the county of the employer is collected and included in EDD's UI wage record database. However, the location noted for the employer is the office responsible for handling payroll-related items. For example, a drugstore chain such as Longs has employees working in its stores throughout the state. However, since the UI wage record data forms are completed in a central location in Contra Costa County, the county of employment for all employees of Longs Drugstores is noted as Contra Costa. Having more precise information on the actual county in which former students are employed would provide consumers, educators and policy-makers with valuable information on job placement rates and wages within a college's general service area for graduates of particular occupational education programs.

   The pilot project, which will be completed in June 1996, involves sending a brief survey to employers of approximately 6,500 former community college occupational education majors who either received a degree or certificate in an occupational education program or who completed 24 or more units, but not an associate degree or certificate. The sample of former students to be tracked was drawn from databases of the 18-college pilot project described in this report. The survey will be mailed in February 1996, to the company the individual was employed in the second quarter of 1995 (April-June). If the former student was not employed in the second quarter of 1995, the survey will be sent to his or her employer in the first quarter of 1995 (January-March). In those cases where the former student had multiple employers in the time period examined, the survey will be sent to the

employer in which the individual received the highest quarterly wage.

Drafts of the cover letter to be sent to the employer, the survey and the list of occupational group titles and descriptions are provided on the following pages. The survey will contain the name and social security number of each of the former students employed at the company. The employers will be asked to provide information on the employee's most recent job title, the number of scheduled hours the employee worked in a typical week during the second quarter of 1995 (April-June), and the county of the employee's job site. The data on the returned surveys will be added to the former students' Post-Education Employment Tracking Study file which contains the UI wage record and demographic and educational data. The purpose of this pilot study is to determine the cost of collecting the supplemental information from employers, employers' willingness to complete the survey, and the value of the additional data in enhancing the usefulness of the Post-Education Employment Tracking System.

Dear California Employer:

Please help the Employment Development Department (EDD) and a state educational agency in a study of training programs in California. You may assist in this study by providing occupational information for former training program participants who are shown by Unemployment Insurance records to have been employed by your firm sometime between April 1, 1995 and June 30, 1995. The requested information includes job title, job location and weekly hours.

Please direct the enclosed survey form and list of occupations to the most appropriate person in your firm for completion. Based upon employers' responses, local training providers will receive non-confidential statistics describing jobs found by former students. Please complete the survey form even if a former student is not currently employed by your firm or has worked for your firm even a short time. Instructions for completing each item are contained in the survey form.

Each response to this survey is important since this study is testing follow-up methods for a comprehensive statewide process. If you are unable to provide the requested information, please return the survey form to Dave Jones stating the reason for non-reply in the comment section. This will provide valuable information for planning a more comprehensive survey and save the cost of further mailings.

Should you have questions, please contact Dave Jones of my staff at (916) 262-2263.

Sincerely,

Richard Holden, Chief,
Labor Market Information Division

EDD Serving the People of California

State of California/Health and Welfare Agency

CALIFORNIA STUDENT FOLLOW-UP SURVEY
A Survey to Identify Jobs Held by Training Program Participants

1. Enter your firm's current or most recent **Job Title** for each listed employee. Report an employee who works in more than one job category in the job that you believe requires the highest level of skill. Identify all employees by their Social Security Number (last names have been shortened to six characters).
2. From the attached **List of Occupations**, enter the two digit Occupational **Group Code** which most closely describes the employees most recent job.
3. Enter the number of scheduled **Weekly Hours** the employee worked in a typical week.
4. Enter the county name of the employee's **Job Site.** You may abbreviate county names.

Employee Name	Social Security Number	Job Title	Occ. Group Code	Weekly Hours	Job Site (County)

Name:_____ Phone: _____

Comments (including improvements to this form)

_____

_____

For assistance, please call Dave Jones at (916) 262-2263. Please return survey forms in the enclosed envelope or, if more convenient, you may fax your response to (916) 262-2354.

Employment Development Department/LMID-COCCC/PO Box 826880/MIC 57/Sacramento, CA 94280-0001

TA282b

LIST OF OCCUPATIONS

Group Code Occupational Group Title and Description

MANAGERIAL, PROFESSIONAL, AND TECHNICAL OCCUPATIONS

10 **Manager Supervisor**: directs manages, plans, and administers activities in an organization, include managers with first line supervisory responsibilities.

21 **Management Support**: examples are accountants, financial analysts, personnel professionals; purchasing agents, compliance inspectors, and tax examiners.

22 **Engineers, Architects, Drafters, and Related Technicians:** examples are mechanical, electronic, and civil engineers, architects, surveyors, drafters, and engineering technicians.

24 **Natural Scientists and Related Technicians:** examples are physicists, chemists, geologists, biologists, foresters, botanists, petroleum technician, and nuclear technicians.

25 **Computer, Mathematical, and Related Occupations**: examples are systems analysts, programmers, mathematicians, statisticians, actuaries and related technicians.

27 **Social Science, Recreation, and Religious Occupations:** examples are recreation directors, clergy, social workers, economists, urban planners, and human services workers.

28 **Law Related Occupations:** examples are lawyers, legal assistants, paralegal, adjudicators, and title examiners,

31 **Educators , Librarians, and Related Technicains**: examples are all class room teachers (incl. pre-school) and instructional aides, librarians and library technicians, audio specialists, and vocational instructors.

32 **Health Practitioners and Care Providers:** examples are nurses (RN and LVN), EMTs, pharmacy tech., psychiatric tech., veterinarian tech., and radiological tech.

34 **Writers, Artists, Entertainers, and Athletes:** examples are public relations and media workers, interior and floral designers, musicians, dancers, and athletes.

39 **Miscellaneous Professional Occupations:** occupations which do fit the above categories where substantial post-secondary and/or equivalent on-the-job experience is required. Typically paid by salary.

SALES OCCUPATIONS

43 **Sales-Service**: examples are insurance sales, real estate sales, and travel agents

49 **Sales-Product**: examples are sales engineers, sales clerks, cashiers and cashier-checkers, vehicle sales, and telemarketers.

CLERICAL OCCUPATIONS

53 **Industry Specific Clerical**: examples include banking (tellers), financial, municipal, transportation, travel, and real estate clerks, bill collectors, and adjustment clerks..

55 **Secretarial and General Office Clerical:** examples are secretaries, typists (word-processors), receptionists, file clerks, general office clerks, personnel clerks, bookkeepers and accounting clerks, payroll clerks, billing and cost clerks.

56 **EDP and Office Machine Operators:** examples are billing machine, duplicating, and computer operators, and data entry keyers.

57 **Communications, mail Distribution**: examples are switchboard operators, mail clerks, postal workers, messengers, and order fillers.

Group Code	Occupational Group Title and Description

52 **Material recording, Dispatching**: examples are dispatchers, production expediters, stock clerks, meter readers, traffic and shipping clerks.

SERVICE OCCUPATIONS

63 **Protective Service:** examples are fire fighters, police officers, correctional officers, detectives, criminal investigators, guard-watch guards, and fish and game warden.

65 **Food and Beverage Service:** examples are bartenders, waiter-waitress. cooks, fast food workers, food preparation workers, counter attendants, and butcher-meat cutters.

66 **Health Service**: examples are medical and dental assistants, nurse aides, physical therapy aides, home health workers

67 **Cleaning, Building Service**: examples are maids and housekeeping workers, janitors, and pest controllers.

68 **Personal Service**: examples are hair stylists, manicurists, flight attendants, ushers, child care, and amusement-recreation attendants.

AGRICULTURE AND FORESTRY

70 **Agriculture, Timber, and Forestry**: examples are nursery workers, animal care givers, farm equipment operators, pruners, fallers, buckers, and landscape workers.

PRODUCTION, CONSTRUCTION, OPERATIVES, AND MATERIAL HANDLING

83 **Inspectors**: examples are production inspectors and testers, quality control technicians, and transportation inspectors.

85 **Mechanics, Installers and Repairers:** : examples are maintenance, automotive , and aircraft mechanics, electronic repairers, cable installers, Heating and air conditioning repairers-installers.

87 **Construction Trades**: examples are carpenters, plumbers, electricians. and masons, sheet metal workers, painters, and carpet installers.

89 **Precision Production Workers:** examples are tool and die makers, machinists, cabinet makers, sheet metal workers, bakers, and layout-pattern workers.

91 **Machine Set-up, Operators and Tenders (working in a production environment):** examples are cutting, forming, and fabrication machine tool operators, plating machine operators, welding machine operatives, woodworking machine operators, printing trades, semiconductor processors, ands chemical machine operators.

93 **Assemblers and Fabricators (Hand):** examples are welders and cutters, aircraft assemblers, structural metal fitters, electronic and electrical assemblers, and cannery workers.

95 **Plant System Workers**: examples are power plant operators, stationary engineers, and waste treatment plant operators.

97 **Transportation and Material moving occupations:** bus and truck drivers, driver-sales, aircraft pilots, industrial vehicle operators, operating engineers, and water transportation workers.

99 **Laborers, Helpers, Material Movers:** examples are carpenter helpers, laborers, vehicle washers, laborers, and unskilled workers-(less than one week of training).

ADDITIONAL STEPS THAT HAVE BEEN TAKEN TO ENHANCE THE EFFECTIVENESS OF THE POST-EDUCATION EMPLOYMENT TRACKING SYSTEM

The California Employment Development Department doesn't collect UI wage record information on people who leave the state, work in the military, work for the federal government, are self-employed, receive all of their earnings on a commission basis, are postsecondary work-study students or are elected state and local government officials. It is estimated that individuals in these categories account for about 10% of the state's workforce (*Baj et. al., 1991).*

Since the completion of the pilot study, EDD has entered into agreements with the federal government's Office of Personnel Management and the Department of Defense to add the wage record data of California residents who are federal civilian employees or are employed in the military. Including federal civilian and military employees in the UI wage record database will expand the number of former community college students n the Post-Education Employment Tracking System.

RECOMMENDATIONS FOR IMPROVING THE USEFULNESS OF PEETS' DATA TO ASSESS THE EFFECTIVENESS OF COMMUNITY COLLEGE OCCUPATIONAL EDUCATION PROGRAMS

As noted in the previous section of this report, several of the most serious

limitations of the Post-Education Employment Tracking System (PEETS) are currently being addressed.

Acquiring wage record data of former students who are either employed as civilians by the federal government or are in the military will increase the percentage of former students that can be tracked. If the Employer Survey Pilot Project demonstrates that it is cost effective to collect supplemental information from employers on former students' job titles, number of hours worked per week and county of employment, then PEETS will allow for determinations on whether students' post-college jobs are in fields related to their occupational education training, their hourly wages, whether or not they are employed full-time and the county in which they are employed.

Even with the enhancements noted above, there are several major shortcomings of the Post-Secondary Employment Tracking System which limit its full potential to provide useful accountability data on the effectiveness of community college occupational education programs. These limitations include:

1. Not knowing whether the community college program completors and leavers continued their education at a four-year college or university;

2. Not having comparison data on the job placement rates and wages of individuals who either didn't attend college after high school or participated in a postsecondary education proprietary school;

3. Not having accurate information on the primary goal students had prior to their last attending their community colleges;

4. Not having data on students' and their employers' perceptions of the quality of education received at the community college in preparing the student to enter and/or advance in their desired field of employment; and

5. Not having a central agency to coordinate the collection, analysis and dissemination of the postsecondary employment and/or continuing participation in higher education rates for all students in California's accredited public and private secondary and post-secondary educational institutions, as well as job training and corrections programs.

Recommendation 1. The UI wage record data and the Chancellor's Office Student MIS files should be matched with student files from California's public and private four-year colleges and universities. This will enable PEETS users to (1) separate the employment data for former students who continue their education after leaving their community colleges from that of former students who are no longer attending college in California; and (2) assess the economic value of completing upper division coursework and degrees in particular fields of study.

The need to know whether students continued their education after leaving the community college is evident in the finding that about 25% of the occupational education completers in Florida's community colleges continued their education at a four-year college or university, and 15% of these program completers were working and attending classes after leaving the community college (*Jarosik and Phelps, 1992).* Not knowing whether or not former community college students are enrolled in a postsecondary education institution will result in understating the employment rates and wages of program leavers. This was illustrated in the pilot project study where it was difficult to discern whether the lack of college-to-post-college gains in wages among students who completed an Associate Degree in Accounting could be attributed to the continuation of their studies at a university or to labor market conditions for graduates in this field.

Linking UI wage record data with the MIS data of all accredited California public and private postsecondary education institutions would also provide the state with a cost-effective method for tracking the transfer, graduation, employment and wage rates of students. At present, the state of California doesn't have an effective system in place for tracking the transfer rates of students from community colleges to CSU, UC, or private colleges and universities.

Recommendation 2. Consideration should be given to expanding PEETS to include students enrolled in California secondary education schools, Regional Occupation Programs (ROPs), publicly-funded job training programs; and, given the size and projected growth of its population, inmates in correctional institutions. This information would provide comprehensive data on the extent to which participation in different types and levels (secondary through graduate school) of instructional programs is associated with gains in employment, wages and/or continued education rates for participants in different population groups. If data on inmates in California's corrections system were linked to PEETS, then policy makers would have accurate longitudinal data on the relationship between the level and type of educational/job training acquired by individuals while incarcerated and their post corrections recidivism rates, job placement rates, and wages.

At present, students are asked to select from a list of statements the one which most closely reflects the primary reason they have for attending college. The Chancellor's Office should ask one of its statewide committees to evaluate the extent to which the options provided to students adequately reflect the range of occupational-related objectives for attending college.

The data would be of great value in influencing public policy decisions, in assisting training entities in assessing and strengthening their programs, and in providing consumers with much-needed information on the economic return on their investment in selecting different types and levels of educational programs and providers.

Recommendation 3. By the start of each term, community colleges should require all students to identify the primary objective they have for attending college. Knowing the primary reasons students have for attending college will allow for much more meaningful analyses and interpretations of the data. To illustrate, although it may contribute to improved job performance, working adults attending classes to keep current in their fields would not necessarily be expected to receive increases in their employment rates or wages. Similarly, a working adult who is attending classes to prepare for a new occupation and/or to complete a bachelor's degree in their desired field would not be expected to realize gains in their employment rates or wages. On the other hand, we would anticipate gains in college-to-post-college employment rates and wages of students attending a community college to acquire skills needed to enter or advance in the labor market.

Recommendation 4. The California State Legislature should create a state-wide agency to collect follow-up data on the employment, earnings and continuing postsecondary education rates of all participants in the state's education, employment and job training programs. Follow-up data should be collected from participants in the programs ranging from secondary schools to Ph.D. programs, and from federal and state funded job training programs to the state's burgeoning corrections/prison programs.

Florida's Education and Training Placement Program (FETPIP), a third-party agency funded by the Florida State Legislature to collect, analyze and disseminate follow-up data for participants in Florida's education and training programs, is an excellent model on how a state can gather and report information required to meet increasing demands for consumer information, accountability, program improvement and evaluation of its educational and job training programs. The following description of Florida's Education and Training Placement Program is taken from an article published in the Spring 1995 issue of the California Community Colleges Association of Occupational Educators Newsletter (*Friedlander, 1995, pp. 3-4).*

Description of Florida's Education and Training Placement Program (FETPIP).

In 1988 the Florida legislature created Florida's Education and Training Placement Program. FETPIP is a state-wide agency that collects follow-up data on the employment, earnings and continuing post-secondary education rates of close to two million former participants in 75 different Florida education, employment, and job training programs. These programs range from secondary schools to Ph.D. programs, and from JTPA to the state's burgeoning corrections/prison programs. The operating budget for FETPIP this past year was approximately $320,000. The funds for this agency are provided by the Florida State Legislature. The agency has been able to successfully track the job placement earnings and/or continuing higher education rates of about 50% of the 1.8 million individuals it tracks at a cost of 36 cents a match. The match rates range from a high of 88 percent for community college associate of arts degree recipients, to a low of 30 percent for recent releases from state prisons.

Overview of the FETPIP Process. Each of the 75 participating public and private secondary, post-secondary and proprietary educational institutions, as well as public and private employment and training agencies send data tapes to FETPIP containing the students'/clients' social security numbers and relevant demographic, socioeconomic and programmatic data. These databases are matched with those of the U.S. Department of Defense, U.S. Office of Prison Management, U.S. Postal Service, Florida Department of Administration (individuals employed by state government agencies) and Florida Department of Labor and Employment Security (the equivalent to California's Employment Development Department). This latter agency collects from employers, on a quarterly basis, the name and address of the employer, the standard industrial classification of the employer, the total number of employees in that establishment for the reporting period, and the number of weeks worked and reported earnings for each of the identified employees.

In addition, FETPIP sends surveys to approximately 30,000 employers to determine the occupations and county locations of former students/clients who are being tracked. This survey is designed to establish the relationship between the retraining received by students/clients and the types of occupations in which they are working. In each of the past seven years completed surveys have been returned by 85 percent of the

employers from whom such data was requested. This high response rate is primarily due to the ease with which the survey form can be completed. Employers are provided the names and Social Security numbers of the individuals who are being tracked (usually no more than a few for any given employer), and they are given the option of selecting titles or codes from the *Occupational Employment Statistical Codes Directory* provided or writing in their own job titles of the individuals being tracked. They are also asked to indicate the county where the individual is employed. This information is entered into the databases maintained by FETPIP.

FETPIP is responsible for working with the education and training agencies in developing common data definitions and collecting, analyzing and disseminating data needed to meet accountability and program requirements. It is not responsible for establishing policies or making decisions regarding program effectiveness. The comprehensive data collected by FETPIP enable it to provide answers to such questions as:

Having a single agency responsible for coordinating the collection, analysis and dissemination of follow-up data has resulted in substantial cost savings for both the state and for each of the 75 education and training agencies that participate in the program. For example, it was estimated that Florida school districts and colleges saved in excess of $3.1 million a year by having a third-party agency responsible for conducting the follow-up studies, compared to what it would have cost each of the school districts and colleges had they continued their past practice of collecting this information on their own. These substantial savings of $3.1 million per year do not include the money saved by the various public and private training agencies that are also involved in employment and training (e.g., proprietary schools, JTPA, corrections systems and programs for welfare recipients).

At present, most of the public and private education, employment and training programs in California collect follow-up data on their former students to provide consumer information to meet state and federal accountability requirements and to use for program evaluation and improvement. The methods of conducting these follow-up studies typically include mail and/or telephone interviews with former students or participants. These methods are generally expensive and yield low response rates. Furthermore, the definitions of the outcome measures used in these follow-up studies vary from agency to agency and, as such, make it difficult for program comparisons.

At a time when there is increased demand for accountability data and diminished resources to collect such information, it makes a great deal of sense for California to consider establishing a third-party data collection agency similar to the Florida Education and Training Placement Information Program described above. This agency should be funded by the State Legislature and its mission should be limited to coordinating the collection, analysis and dissemination of basic follow-up data on the employment, job placement, earnings and continuing postsecondary education rates of

students/clients. Examples of the types of summary reports produced by the Florida Education and Training Placement Program are provided in Appendix A.

The California Community Colleges Chancellor's Office staff should consider taking the lead in working with representatives of other state education and training agencies to develop a proposal for establishing a third-party agency responsible for collecting, analyzing and disseminating follow-up data needed for accountability, consumer information, program improvement and evaluation.

Recommendation 5. The following recommendations pertain to how the follow-up data residing in the PEETS databases can be analyzed. If implemented, these recommendations will make the follow-up data easier to interpret and use for purposes of accountability, consumer information, program improvement and program evaluation.

A. As noted in **Recommendation 3,** the primary reason a student has for attending college needs to be updated by the start of each term. This information is vital in assessing the extent to which the student's primary objective for attending college was achieved.

B. In the present study, occupational education students were defined as those who completed a minimum of six units in SAM C level courses in the same four-digit occupational major TOP Code area during the last two years they attended their community colleges. These occupational students were placed into one of the following educational attainment categories: no units completed; 1-11.9 units completed; 12-23.9 units completed; 24 or units completed without a degree or certificate; and completion of a degree or certificate in an occupational education major. Data analyses were conducted on the relationship between students' educational attainment level and their post-college employment rates, wages and gains in year-round employment rates and earnings from their last year in college to one to three years out of college.

   In terms of examining the relationship between participation in community college occupational education programs and post-college success in the labor force, it would have been more useful to have limited the comparisons of non-degree/certificate achievers to the number of occupational education courses completed, rather than the total number of units earned. To illustrate, a student in the 24 or more unit educational attainment category may have completed 28 units, of which six were in the same four-digit occupational major TOP code area and the remaining 22 units were in basic skills and ESL courses. Another student in the 1-11.9 unit educational attainment category may have completed all 11 of his or her units in occupational education courses. A more meaningful comparison between these two students would have been based on the number of occupational education units, rather than total number of units completed.

C. Where appropriate, multivariate statistical analyses should be conducted to identify the significance of various factors, by themselves and in combination with one another, to explain gains from collegiate to post-collegiate employment earnings outcomes. More specifically, the results of multivariate statistical analyses would provide PEETS users with data on the importance of specific demographic, educational background, and college experience factors in predicting post-college employment and earning for various groups of students.

Members of the California Community Colleges' Vocational Education and Economic Development Research and Accountability Committee have recommended the following method be used to place students into the following educational attainment categories:

- Vocational Education Degree Completers. Students who completed an associate degree in a four-digit vocational education TOP code.

- Vocational Education Certificate Completers. Students who completed a state-approved certificate program in a four-digital vocational education TOP code.

- Vocational Majors with 24 or More Units. Students who completed 12 or more units in the same four-digit vocational education TOP code and completed an additional 12 or more units of college degree-applicable coursework (no degree or certificate).

- Vocational Majors with Fewer Than 24 Units. Students who completed 12 or more units in the same four-digit vocational education TOP code and completed up to 11.9 units of college degree-applicable coursework.

- Non-Vocational Majors With Some Vocational Education Coursework. Students who completed 6 to 11.9 units of vocational education coursework in the same four-digit TOP code. Students in this category will be divided into those who completed 24 or more units of college degree-applicable units and those with fewer than 24 units.

- Non-Vocational Majors with Little or No Vocational Education Coursework. Students who completed fewer than six units of vocational education coursework (SAM coded A,B, or C classes). Students in this category will be divided into those who completed 24 or more units of college degree-applicable units and those who completed fewer than 24 units.

- Students Who Withdrew from College Without Completing Any Units. Students who withdrew and/or received an "F" or Non-Credit grade in all the courses they attempted.

These educational attainment categories should allow for more meaningful

comparisons on the relationship between educational attainment levels and post-college wages and job placement rates. The Chancellor's Office staff will be examining the viability of these proposed categories.

CONCLUSION

Pending federal workforce block grant legislation as well as legislation passed in California require the development of a performance-based accountability system for all occupational education and job training providers. At the federal level, HR1617 (McKean and Goodling) and S143 (Kassenbaum) contain specific accountability performance standards. Those contained in HR1617 include placement and retention in a job for at least six months and increased wages. Senate Bill 143 specifies that states use quarterly UI wage records to track the training participants' job placement and job retention rates.

SB 1417, which passed the California State Legislature in 1994, requires among other things, the development of a performance-based accountability system for state and federally supported employment and job training programs. SB 645 (Johnston), signed into law in 1995, calls for the State Job Training Coordinating Council to coordinate the development of an educational and job training report card program to assess the accomplishments of California's workforce preparation system. This annual report card on the performance of state and federally funded education and job training programs is to include such measures as employment and wage data for one, three and five years after the completion of training, the relationship of training to employment, and return on public investment. SB645 specifies that the performance-based accountability system match UI wage record data with student data maintained by education and job training providers to document the job placement, job retention and wages of program participants.

More recently, the accountability requirements contained in the proposed framework for California's One-Stop Career Center System includes using UI wage record data to identify earnings at placement, gains in earnings, employment rates, the relationship of employment to training, and job retention.

The findings and recommendations of this pilot project show the potential value of the Post-Education Employment Tracking System in providing data that could be used in meeting federal and state accountability requirements for vocational education and job training programs, in assisting educators in assessing and strengthening their programs, and in providing consumers with much needed information on the economic return on their investment in selecting different types and levels of education programs and providers. Serious consideration should be given to implementing the recommendations advanced in this paper for enhancing the effectiveness of the Post-Education Employment Tracking System.

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01/22/93
DW
FETPIP

DISTRICT POSTSECONDARY VOCATIONAL PROGRAMS
AGGREGATED OUTCOME DATA
STATEWIDE 1990-91 COMPLETERS

STATE LEVEL FETPIP FOLLOW-UP OUTCOMES

(AUTOMATED MATCH DATA ONLY - DOES NOT INCLUDE LOCALLY COLLECTED DATA)

Note: #'s and %'s are unique to each category (e.g., some that are employed may also be continuing ed,etc.)

TOTAL FREQ = Total number unique individuals (unduplicated) reported for follow-up WITH VALID SSNs to FETPIP

W/MATCH DATA = # of all records with any kind of match data (Whether deemed unusable, undeterminable or exempt)

% W/MATCH DATA = % of total frequency found employed, continuing education &/or in the military

FOUND EMPLOYED = Total number found employed regardless if also their continuing education or found in the military

% FOUND EMPLOYED = Number found employed divided by total freq

EMPLOYED FULL QTR = Total number employed >11 weeks earning at least $2,039 (min. wage for 12 weeks)

% EMPLOYED FULL QTR = % of employed working full qtr

IDENTIFIED JOB TRNG REL = Total number of those employed with jobs related to training

% IDENTIFIED AS JOB REL = % of all found employed with jobs related to their training

FULL QTR AVG EARNINGS = Average quarterly earnings for those employed >11 weeks earning at least $2,040
**** Earnings are regardless of whether employment is related to training.
See OES WAGE REPORT for occupationally specific average full quarter earnings.

CONT ED = Total number of all found continuing education (Division of Public Schools, Com College, &/or University)

% CONT ED = % of total freq found continuing their education

IN MIL = # found in military service (no % provided due to small incidence rate)

TOTAL "POOL" COUNT = Total number of records with useable match data, excludes exceptionalities without positive outcome data, non-resident aliens, undeterminable data, those incarcerated, etc. Serves as the divisor in the the current placement rate calculation.

TOTAL # TRAINING RELATED = Total # individuals with employment related to training, continuing their education or in military

CURRENT PLACEMENT RATE = Total # training related divided by total "pool" count

**** JOB TRAINING RELATEDNESS DECISIONS MADE by FETPIP STAFF BASED ON 4th QUARTER OF 1991 EMPLOYMENT DATA (OCT.- DEC.)

PROGRAM TERM CODE	TOTAL FREQ	# W/MATCH DATA	% W/MATCH DATA	# FOUND EMPLOYED	% FOUND EMPLOYED	# EMPLOYED FULL QTR	% of EMPLOYED EMPLOYED for FULL QUARTER	# IDENTIFIED JOB TRNG RELATED	% IDENTIFIED AS JOB REL	FULL QTR AVG EARNINGS $	# CONT. ED.	% CONT. ED.	# IN MIL.	TOTAL "POOL" COUNT	TOTAL # TRAINING RELATED	CURRENT PLCMENT RATE %
	179	142	79%	124	69%	81	65%	69	56%	$4,632	42	23%	0	127	100	79%
AMT0190	AIRCRAFT AIRFRAME MECHANICS															
	166	124	75%	90	54%	43	48%	41	46%	$4,493	83	50%	4	110	97	88%
AMT0390	AIRCRAFT POWER PLANT MECHANICS															
	102	62	67%	54	53%	31	57%	27	50%	$4,747	31	30%	1	58	47	81%
ARR0900	AUTOMOTIVE BODY REPAIR AND REFIN															
	37	23	62%	23	62%	8	35%	9	39%	$3,383	3	8%	0	18	10	56%
ARV0990	COMMERCIAL ART															
	71	43	61%	36	51%	20	56%	8	22%	$3,495	12	17%	0	32	19	59%
AVS0090	AVIONICS															
	30	22	73%	20	67%	11	55%	8	40%	$4,606	14	47%	0	17	16	94%
BCV0101	MASONRY															
	25	17	68%	16	64%	6	38%	4	25%	$4,417	5	20%	0	14	7	50%
BCV0111	CABINET MAKING AND MILLWORK															
	6	4	67%	2	33%	0	0%	0	0%	$**,***	3	50%	0	4	3	75%

FLOSTATS
A LABOR MARKET INFORMATION SYSTEM

VOLUME 14 NUMBER 4.1 SPRING 1994

Florida Education and Training Placement Information

by Jay J. Pfeiffer, Program Director

The Florida Education and Training Placement Information Program, or FETPIP, collects follow-up data on students from a variety of education and training programs in the state. FETPIP obtains follow-up data by linking the records of former students, program participants, or inmates to information maintained by several state and federal agencies. It also contacts the current employers of former students for information on their job titles and work locations. By doing this, we gain a better understanding where Florida students go and what they do after graduation.[1]

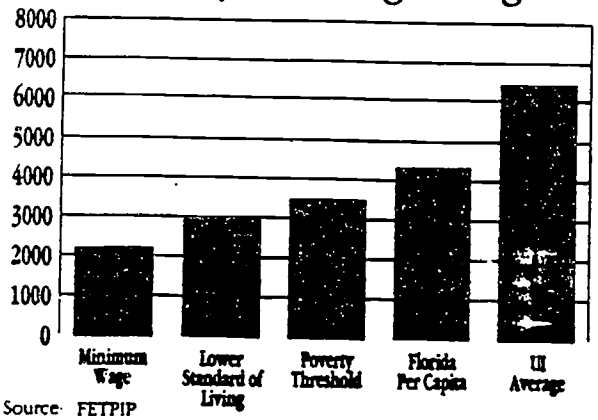
Data which describe employment, military enlistment, and continuing education are provided to administrators and policy makers to assist them in planning and accounting for educational and vocational programs. Additionally, FETPIP has developed information on former prison inmates, migrant and seasonal farm workers, Project Independence clients, and Job Training Partnership Act participants. This year, a trial effort will focus on data collection from a sample of Florida's licensed, private vocational and technical schools.

FETPIP earnings data are collected directly from employers' quarterly payrolls which are a part of the management system supporting Florida's unemployment insurance program. To make earnings comparisons easier, FETPIP typically considers the earnings for employees who worked full-time for a full quarter.[2]

Graph 1, at the left, compares the "full time/ full quarter" earnings for five wage measures: minimum wage, a lower standard of living wage, the poverty threshold, the Florida per capita income, and the average wage derived from the quarterly unemployment insurance (UI) report for October-December 1992.

Please turn to "FETPIP" on Page 2

Graph 1: Quarterly Earnings Gauges



Source: FETPIP

[1] *Throughout this article, the word "graduation" is used to describe* ***both*** *graduates from 2- and 4-year colleges or universities* ***and*** *"program completers" who finish other vocational or postsecondary programs.*

[2] *FETPIP collects data from employers who generally report earnings for 12-week quarters, even though an actual quarter might be up to 13 weeks.*

WHAT'S INSIDE

FETPIP Continued from Page 1

Graph 2, below, reflects the earnings for graduates of different educational levels from the 1991-92 school year and may be regarded as initial post-graduation earnings.[3]

As one might expect, high school graduates earned the least while Ph.D. recipients earned the most. One finding of interest is that the **initial** earnings of those with Associate of Science degrees are third-highest, above even Bachelor's degrees.

In any case, according to these data, the earnings of graduates of any program, including high school, exceed the minimum wage level by a substantial margin. This is reflected in Graph 2 by the superimposed lines indicating four of the wage levels from Graph 1.[4]

Allied health occupations figure well in Florida's labor markets. They are occupations that typically have many employment opportunities, high growth, and high wages. Employment in these occupations is also stable. For this reason, nine of the top thirty occupational opportunities identified through Florida's recent Occupational Forecasting Conference were allied health and health services-related occupations.[5]

Many of the Florida workers currently employed in allied health occupations obtained the skills necessary for employment through Florida's schools and other educational programs.

In several occupations, one can obtain employment with either an Associate of Science degree or a Bachelor of Science degree. Graph 3, on page 3, shows the initial quarterly earnings from five such occupations within the health industry. This graph highlights the earnings of 1991-92 degree recipients again for the October - December 1992 quarter. The gauge wages are also included on this graph for reference.

Bachelor's degree recipients clearly earned

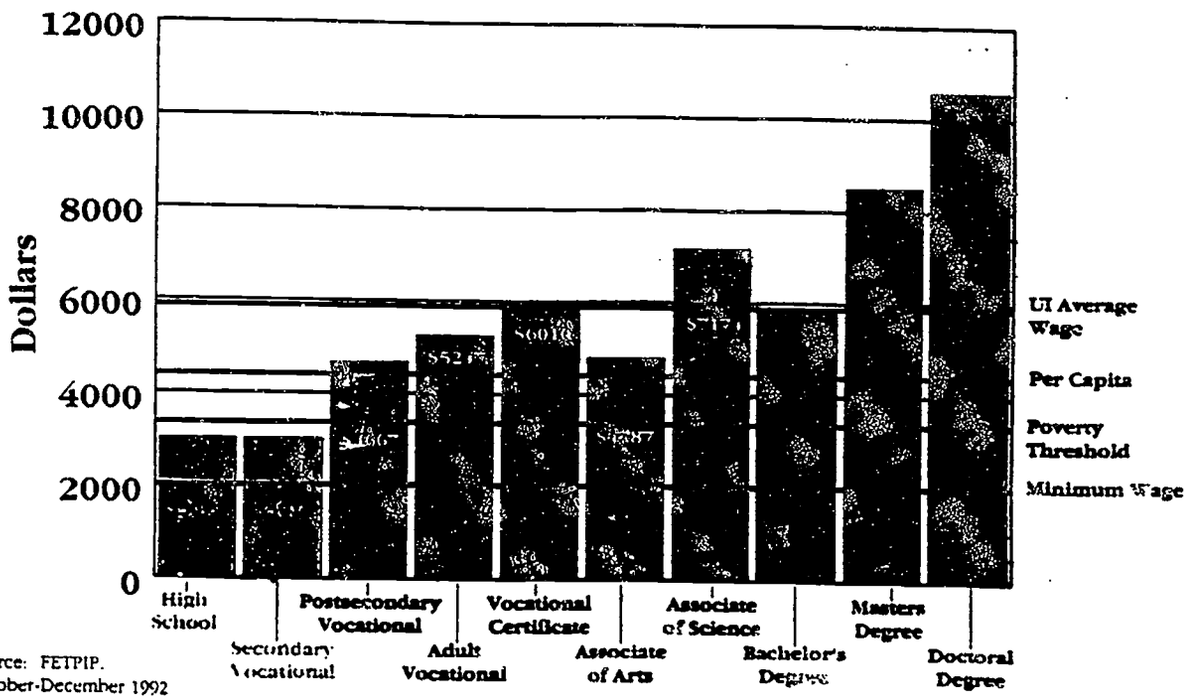
Continued on Page 3

[3] *The earnings account for employment that occurred between October and December 1992.*

[4] *The "lower standard of living" figure is not included.*

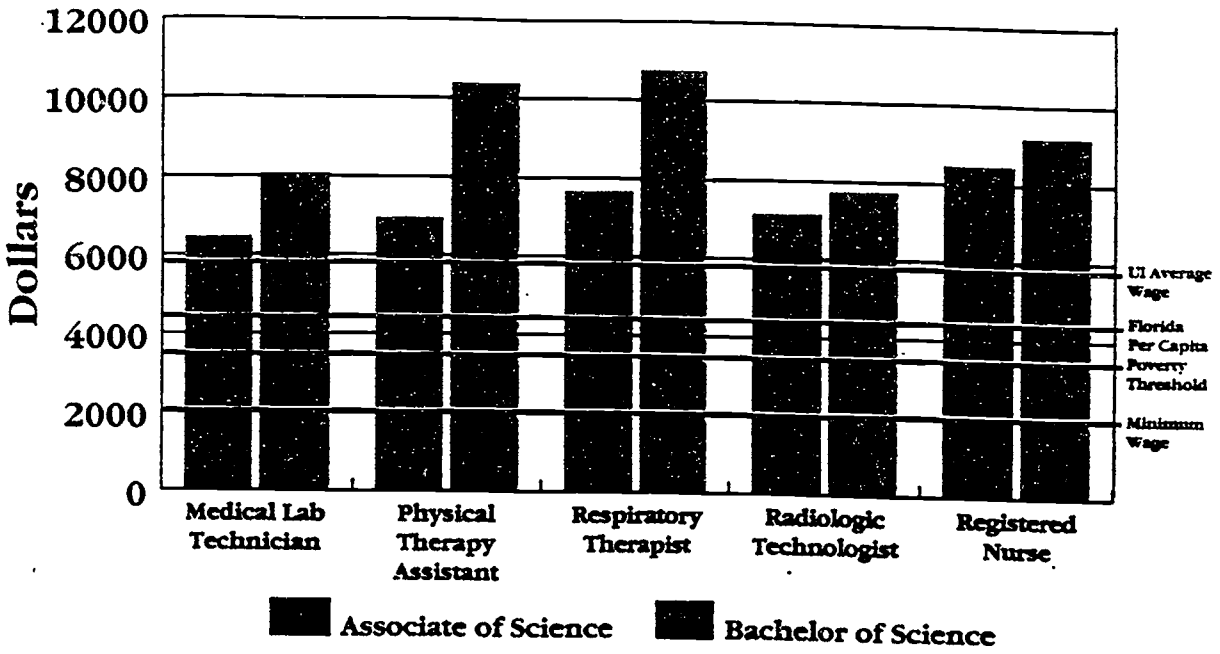
[5] *See the Winter 1993-94 issue of the FLOIS News for a list of all thirty occupations.*

Graph 2: Average Quarterly Earnings for Graduates 1991-1992



Source: FETPIP.
October-December 1992

Graph 3: Quarterly Earnings for Degree Recipients



Source: FETPIP. October-December 1992

more than their Associate degree counterparts. However, all degree recipients earned more during the quarter than any of the gauge levels identified previously.

When there is a clear relationship between a specific degree and the expected occupational outcome (as with Respiratory Therapist, for example), there appears to be an advantage in attaining a higher-level (e.g., Bachelor's) degree.

However, FETPIP data also seem to indicate that in cases where Bachelor-level degrees **do not** clearly and immediately lead to a specific occupation (as with a degree in political science, for example), then the early earnings advantage lies with the Associate of Science degree recipients.

For additional information about FETPIP, call (904) 487-0900.

BIO BOX

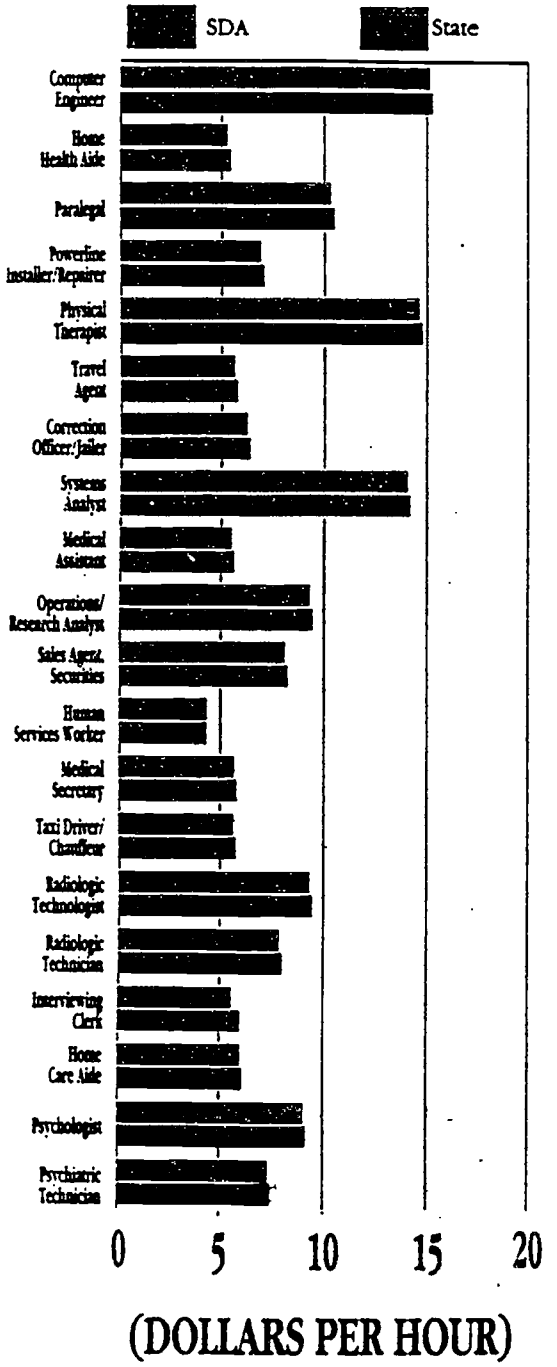
JAY PFEIFFER

Jay has long been involved in policy and evaluation research in education, employment, and training programs in Florida, beginning with the State Manpower Council in 1972.

FETPIP was formally established in 1988 with Jay as the program director. The Partners in Productivity program recognized FETPIP with the Davis Productivity Award in both 1989 and 1991.

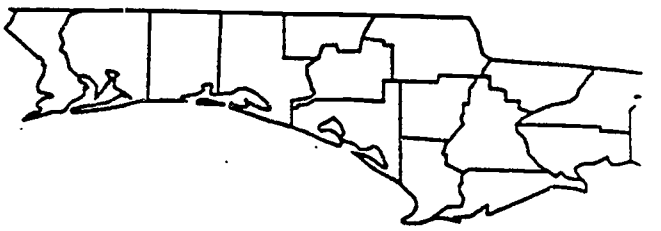
4

ENTRY LEVEL WAGES FOR THE FASTEST GROWING OCCUPATIONS IN DUVAL COUNTY* 1991-2005



*Occupations with growth of at least 100 jobs. Data based on 1992 wages. Source: Florida Department of Labor and Employment Security.

SDA 06: D



The 1993 Florida Price Level Index for Duval County -- 95.74

The purpose of the Florida Price Level Index (FPLI) is to measure the differences from county to county in the cost of purchasing a specific market basket of goods and services at a particular point in time (August 1993). The FPLI measures relative price levels across counties as a cross-sectional index. Unlike the Consumer Price Index, it does not measure inflation from year to year. This index shows that it costs 4.26 percent less than the state average to live in Duval County.

County Population:	693,546
Jacksonville Population:	653,206

SOURCES FOR PAGES 4 & 5:

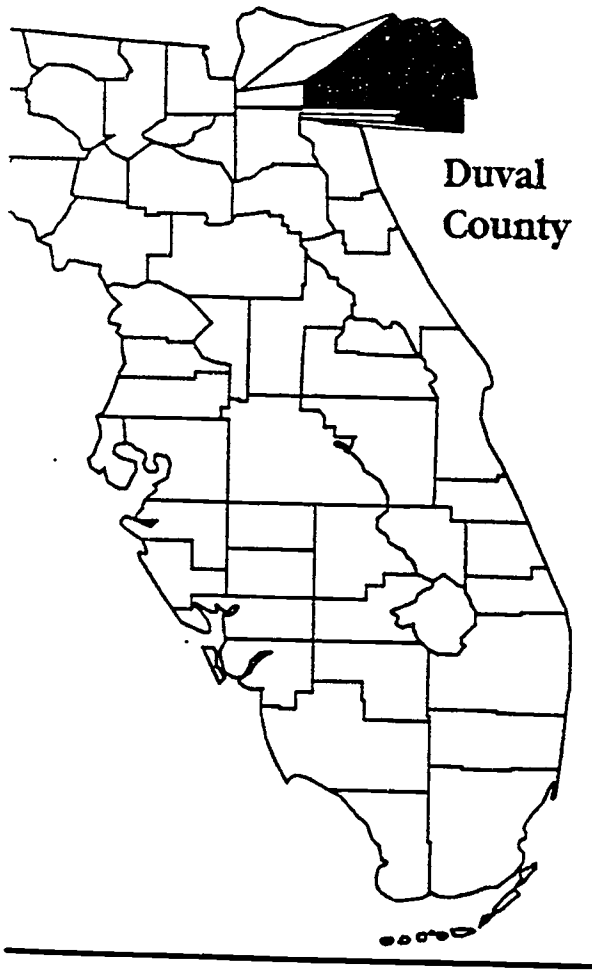
1. The Florida Occupational Information System. 1993-94 Supply and Demand Report. Florida Department of Labor and Employment Security (DLES), Division of Labor, Employment and Training (DLET), Bureau of Labor Market Information (LMI).

2. *Florida Industry and Occupational Employment Projections 1991-2005.* DLES, DLET, LMI, Occupational Employment Statistics Program.

7. *The Florida Statistical Abstract 1993.* Bureau of Economic and Business Research, College Of Business Administration, University of Florida.

OTHER GROWTH OCCUPATIONS IN DUVAL COUNTY

COUNTY



LEGAL SECRETARY
FLOIS SET/OES CODE 111/55102
AVERAGE ENTRY LEVEL WAGE $9.25
AVERAGE ANNUAL OPENINGS 42

POLICE PATROL OFFICERS
FLOIS SET/OES CODE 159/63104
AVERAGE ENTRY LEVEL WAGE $9.89
AVERAGE ANNUAL OPENINGS 66

SCHOOL BUS DRIVERS
FLOIS SET/OES CODE 063/97111
AVERAGE ENTRY LEVEL WAGE $7.25
AVERAGE ANNUAL OPENINGS 50

SECRETARIES
FLOIS SET/OES CODE 113/55108
AVERAGE ENTRY LEVEL WAGE $8.11
AVERAGE ANNUAL OPENINGS 438

COMPUTER PROGRAMMERS
FLOIS SET/OES CODE 108/25105
AVERAGE ENTRY LEVEL WAGE $11.34
AVERAGE ANNUAL OPENINGS 74

HEAVY TRUCK DRIVERS
FLOIS SET/OES CODE 062/97105
AVERAGE ENTRY LEVEL WAGE $8.30
AVERAGE ANNUAL OPENINGS 117

DIESEL ENGINE MECHANICS
FLOIS SET/OES CODE 145/85311
AVERAGE ENTRY LEVEL WAGE $7.87
AVERAGE ANNUAL OPENINGS 61

HEATING/AIR CONDITIONING REPAIRERS
FLOIS SET/OES CODE 125/85902
AVERAGE ENTRY LEVEL WAGE $7.80
AVERAGE ANNUAL OPENINGS 37

ELECTRICIANS
FLOIS SET/OES CODE 135/87202
AVERAGE ENTRY LEVEL WAGE $7.79
AVERAGE ANNUAL OPENINGS 100

4. *Wage Summary Report*, July 1, 1993 through March 31, 1994. DLES, DLET, LMI, Planning Statistics Section.

5. *Florida Estimates of Population 93. April 1, 1993*, University of Florida, Bureau of Economic and Business Research.

6. *The 1993 Florida Price Level Index*, Florida Department of Education, Office of Education Budget and Management.

7. *The 1993 Florida Occupational Wage and Benefit Survey*. DLES, DLET, LMI, Planning Statistics Section.

THANKS FOR YOUR SUPPORT

I'd like to thank everyone for the positive comments I have received recently regarding the "Regional Outlook" section of the ***FLOIS News****. Unfortunately, we don't currently have the staff to handle individual requests for this analysis; however, we can provide you with the source materials.*

– R.V.